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NEUROPSYCHIATRIC ASPECTS OF CHOREA IN CHILDREN *

FRANKLIN G. EBAUGH, M.D.
DENVER

Although numerous articles have been written on the subject of chorea in children, the important and often serious neuropsychiatric aspects of this disease have not been adequately emphasized. When we describe the sudden, irregular, purposeless, incoordinate movements of chorea we should realize that the mental disturbances are apt to be of an emotional nature of similarly irregular type. These emotional disturbances may incapacitate the child and assume an equal or greater significance than the well known motor symptoms of the disease. The personality of the child may suffer after he has passed through a period of lack of motor control, and this may be shown by various defects of adjustment, including a relationship to juvenile delinquency. The interference with school progress during the receptive period of the child may assume great importance in the later adaptation of the child.

The material used for this report includes thirty-two school children referred by teachers to our outpatient clinic during the past year. Of this group, eighteen were boys and fourteen were girls. The age limit varied from 6 to 15 years, the majority of the children being 12 years old or under. The frequency of delinquency most likely accounted for the greater number of our cases being boys. All cases of chorea were of the ambulatory type and, with a few exceptions, were mild in degree. They all demonstrated typical, irregular, incoordinated, purposeless jerkings of generalized type. Many children were referred because of general fatigue and weakness leading to inability to keep up with their school work. Of this group of thirty-two children, previous attacks had occurred in sixteen cases. Many children had had two or more attacks during a period of five years. The fall and spring months were the most frequent time of onset.

Table 1 summarizes the observations in this group of children. The data may be analyzed under three main headings:

1. The mental aspects accompanying or following chorea in children, including emotional lability, fatigue and intellectual incoordination, and the relation of chorea to the development of delinquency.
2. The causal factors of chorea, mainly, the physical condition, hereditary influences and the psychogenic factors.
3. Problems of treatment.

EMOTIONAL LABILITY

Emotional lability constituted the most constant observation in this study. Children who, previous to the onset of chorea, were quiet and manageable, suddenly became restless, irritable, extremely sensitive and abusive. Some of these children became violent. For instance, patient 11 attempted to kill his younger brother. Another boy attempted to strike his brother over the head with a shovel. Some children were destructive (patients 18 and 24). Extreme irritability may be combined with marked overactivity similar to that encountered in hypomanic states. Temper outbreaks were frequent in cases 9, 10, 17, 24 and 26. Outbursts of depressive nature were likewise encountered, especially in cases 12, 21 and 27. The cases that showed depressive tendencies are closely analogous to those seen in epidemic encephalitis,[1] although of less severity. None of this group threatened or attempted suicide. Many children appeared apathethic, restless and indifferent, particularly regarding their school progress (patients 14, 20 and 31). Silly, causeless laughter occurred in cases 3 and 18. Associated with these affective changes, as in epidemic encephalitis, we see marked disturbances in sleep. Insomnia, night terrors and sleep walking occurred prominently in this study. A typical case abstract will be of value to illustrate these findings along with kymographic tracings.

A. E., a school girl, aged 14, in the eighth grade, had choreiform movements on the left side, which began in the summer of 1925. At that time the patient was admitted to the Children's Hospital, where a tonsillectomy was performed. She remained there for a rest period of six weeks. On her return home she seemed improved, but the twitchings returned shortly afterward on the right side. She became extremely irritable, cried with the slightest provocation, was overactive, had night terrors, complained of bad dreams, fussed continually with her brothers and sisters, and was extremely upset and nervous. The personal history shows numerous acute infectious diseases; influenza in 1919, measles in 1921, and scarlet fever in the winter of 1925. The personality make-up of the child before the onset of chorea was normal. She was desirous of training to become a nurse.

She complained of pains in the arms and legs. There was moderate chorea on the right side, endocarditis and eyestrain. The Wassermann examination was negative. Blood count revealed: hemoglobin (Dare), 90 per cent; red cells, 5,020,000; leukocytes, 9,350; polymorphonuclears, 61 per cent; small lymphocytes, 34 per cent; endothelials, 4 per cent; eosinophils, 1 per cent. She reported to the clinic at weekly intervals.

* From the outpatient clinic, Colorado Psychopathic Hospital, University of Colorado School of Medicine.

* Because of lack of space, the summary of cases is omitted. The complete article appears in the Transactions of the Section and in the author's reprints.

* Read before the Section on Nervous and Mental Diseases at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

1. Ebaugh, F. G.: Neuropsychiatric Sequelae of Acute Epidemic Encephalitis in Children, Am. J. Dis. Child. **25**: 89-97 (Feb.) 1923. Rhein, J. H. W., and Ebaugh, F. G.: Affective Disorders Following Acute Epidemic Encephalitis, Am. J. Psychiat. **3**: 791-799 (April) 1924.

She gradually became worse, more emotional and excitable, and the twitching changed from side to side. These twitchings became worse during discussions of the home situation, and her preoccupations were thus stated: "When they quarrel I get all upset [referring to three smaller brothers]. They keep things going very lively; always getting hurt." She described an older sister and brother, who were both married, and their quarrels, and said: "There are different things about them." She refused to discuss anything more concerning them at this time. She said: "I dream about going to school; dream about it every night."

The accompanying kymographic tracings are characteristic and show a marked increase in tremor when she was told to think about the home situation or when any disturbing events happened in her immediate environment. There were times during periods of depression when she overreacted to any type of emotional stimuli. She was given a course of six injections of tryparsamide (3 Gm.) and admitted to the hospital for a rest period of one month, after which time arrangements were made for her to be sent to a rest home in the country. The child continues to complain of extreme fatigue, is emotional and flares up over trifles, but is eating

Fig. 1 (case 1).—Kymographic tracings, Jan. 13, 1926. Tracings from left arm in comparison with control. Rate of tremor, 69 per minute. February 10, tracings show increased frequency of tremor, 73 per minute; also increased in tremor when the patient was told to think about school, home troubles, etc.

and sleeping much better, and has gained in weight, and the last kymographic tracing shows no movements.

A second aspect, fatigue with inability to concentrate in school and a general loss in mental ability, was noted in a majority of these cases and constituted a common reason for referring these children to the outpatient clinic. This irregular and unequal performance was considered similar in degree to the motor symptoms present. In mental age rating of this group of children we see that the proper interpretation of intelligence tests requires an appreciation of the physical and emotional disturbances of a child in order to avoid erroneous conclusions. The association of chorea with mental deficiency is well known, and many cases of this type are to be seen in state homes for mental defectives. In this group three defectives were encountered, and it could not be said that the chorea had contributed to this condition. Many children were found to have superior ratings in the intelligence test. Many of these children were referred because they were not making any progress in school and were unable to concentrate, showing that the fatigue in general not only was a motor one but included the intellectual life of the child, causing an irregularity and incoordination in thinking processes. Ramsay Hunt,[2] in his work on the kinetic and static representations in the psychic sphere, produces evidence to support this assertion.

TABLE 2.—*Dynamometer Tests of Patients and Controls*

Case	Age, Years	Right Hand			Left Hand		
1. A. E.	14	19	16	20	20	22	21
Control	..	17	18½	17	18	16	17
2. B. D.	7	8½	7½	8½	8	7	7
Control	..	11	11	10½	10	8	8
3. B. K.	10	16	13	12	13	11	10
Control	..	17	16	16	14	12	13
4. C. C.	14	15	12	15	15½	14	6
Control	..	33	31	29	29	30½	31
5. C. D.	8	7	6½	7	6	8	7½
Control	..	11	12	10	8	10	10
6. D. R.	13	14	17	17	13	13	14
Control	..	25	25	26	25	22	24
7. G. F.	9	8	8	7	8	9	8
Control	..	8	8	10	8	10	8
8. G. I.	13	15	17	16	16	16	15
Control	..	20	22	22	17	17	16
9. G. L.	12	16	14	15	16	16	16
Control	..	26½	18½	21	20½	20	17
10. H. A.	14	16	16	19	17	18	17½
Control	..	23	23	21	20	20	21
11. H. A.	14	28	18	21	17	14	15
Control	..	17	18½	17	18	16	17
12. H. M.	15	41	40	39	34	40	39
Control	..	38	43	45	40	49	82
13. H. R.	11	14	14	15	14	14	13
Control	..	16½	16	15	13½	13½	11
14. H. S.	13	18	21	21	15	22	18
Control	..	20	22	22	17	17	16
15. K. M.	9	10	10	10	11	11	10
Control	..	14	17	15	15	12	11
16. K. M.	13	19	20	17	16	20	16
Control	..	19	18	19	22	21	17
17. K. M.	10	14	14½	14	14	12	12
Control	..	18	18	18	18	17	17
18. K. O.	15	26	28	26	24	25	23
Control	..	38	43	45	40	49	22
19. K. T.	16	19	15	15	16	12	11
Control	..	20	24	27	22	20	22
20. L. A.	11	12	11½	11½	14	12	13
Control	..	16½	16	15	13½	13½	11
21. L. F.	14	33	33½	33½	33½	34½	31
Control	..	33	31	29	29	30½	31
22. M. H.	9	8	8	8	8	7	7
Control	..	11	10	9	10	9	8
23. N. N.	13	24	24	24	23	25	21
Control	..	25	25	26	25	22	24
24. O. M.	8	6	8	7	6	8	7
Control	..	8	8	10	8	10	8
25. P. C.	15	40	35	41	37	36	34
Control	..	33	31	29	29	30½	31
26. P. G.	10	22	20	21	21	21	21
Control	..	18	18	18	18	17	17
27. R. R.	11	21	12	15	12	16	13
Control	..	22	23	22	19	22	21
28. S. C.	11	14	13	13	14	9	12
Control	..	19	18	16	17	15	13
29. S. D.	12	20	20	18	16	14	14½
Control	..	19	18	14	18	16	17½
30. S. G.	12	11	10	9½	9½	9½	7
Control	..	26½	18½	21	20½	20	17
31. S. M.	12	25	21	18	22	19	16
Control	..	19	18	14	18	16	17½
32. V. B.	12	25	21	21	24	21	18
Control	..	26½	18½	21	20½	20	17

A case of interest was seen in the development of chorea in a school girl following excessive dancing of the charleston. The choreiform movements closely simulated the contortions of this dance, and they developed following fatigue and overstimulation combined with school work.

2. Hunt, J. R.: Psychic Representations of Movements and Posture, Arch. Neurol. & Psychiat. **14**:7-19 (July) 1925.

Owing to difficulties in obtaining a mental fatigue test, we used dynamometer ratings along with controls of children the same age. Frequently, as noted by Cobb,[3] these cihldren were unable to grasp the dynamometer to make any sustained effort, particularly when the choreiform movements were severe. This fatigue and weakness is shown in table 2 in comparison with a control group of children of the same age.

RELATION OF CHOREA TO DELINQUENCY

Naturally, with the foregoing mental symptoms one would expect behavior disorders of various types to be

Fig. 2 (case 1).—Feb. 17, 1926. Previous to admission to hospital, the rate of tremor was 66 per minute. Admitted to hospital, Feb. 17, 1926. Tracings taken, March 3, rate of tremor, 72 per minute. March 4, following continuous bath treatment and rest in bed, rate of tremor 52 per minute. March 17, following absolute rest in the hospital and the foregoing treatment, tremors were practically absent and only one noticed in seven minutes. Tracings were made by arranging a tambour on the flexor surface of the forearm. In case 1, hemichorea was present first on the left and then involved the right arm. The tracings were made by Prof. R. W. Whitehead of the department of physiology and pharmacology.

associated with chorea in children. Delinquency occurred in 21.2 per cent of the children examined. Delinquency varied from vagrancy in one case to truancy, vagrancy, lying and stealing automobiles in case 14:

A school boy, aged 15, sent in by the juvenile court following arrest for larceny of automobiles, had always been considered nervous and had had three previous attacks of chorea. He was said to have had five attacks of pneumonia. He was able to reach the eighth grade in school despite irregular attendance. He had always been nervous, restless and oversuggestible and had had numerous court experiences, particularly regarding stealing. Recently with several other boys, of whom he was most likely the leader, he had stolen several cars. Since his first attack of chorea early in childhood, he had been a chronic truant.

He was extremely undernourished, and was tremulous. No choreiform movements were present. Blood count shows secondary anemia. Since his discharge by the court the boy has shown no improvement but has continued to be very restless and emotional. There has been some improvement in his physical condition.

The numerous attacks of chorea followed by nervousness, restlessness and extensive juvenile delinquency in spite of excellent home environment would indicate the importance of studying cases of this type from the physical side.

We feel that the association of delinquency with chorea is a very definite one and that further investigation among a large group of delinquents would throw much light on this problem. In our classification [4] of delinquents in children, chorea would fall under the organic or toxic group.

CAUSAL FACTORS

Although I do not wish to emphasize the well known aspect of chorea developing on a toxic and rheumatic basis, it is very significant that twenty-nine of the thirty-two children reported show positive physical signs. Frequent attacks of tonsillitis were the rule, and dental infections were encountered. Many cases of refractive errors were found to be present, and the occurrence of chorea following acute infectious diseases of childhood, especially influenza, measles and scarlet fever, was noted. Generalized adenopathy, marked undernutrition with fatigue posture, and occasional residuals of rickets were also encountered. It is of interest in this connection to refer to many cases of chorea encountered in examinations in a traveling clinic. Of the 400 children referred for mental examination in twenty-five communities in all parts of the state, forty-four, or 11 per cent, were diagnosed chorea or prechorea. In one town with an altitude of 10,000 feet, 50 per cent of the children referred for neuropsychiatric examination had chorea. This chorea apparently disappeared during the summer months, when the children received fresh vegetables, milk, fresh air and sunlight. The question of the relation of high altitudes to chorea is of interest in comparison with cases of chorea encountered in Eastern cities. It would seem that altitude, as stated by Moleen,[5] influences the nervous system and may have some possible relation to the development of chorea in children. It is noteworthy that in our physical observations only three typical cases of endocarditis were noted.

Osler [6] has emphasized the strong hereditary tendency noted in chorea. In this group of cases frequently one

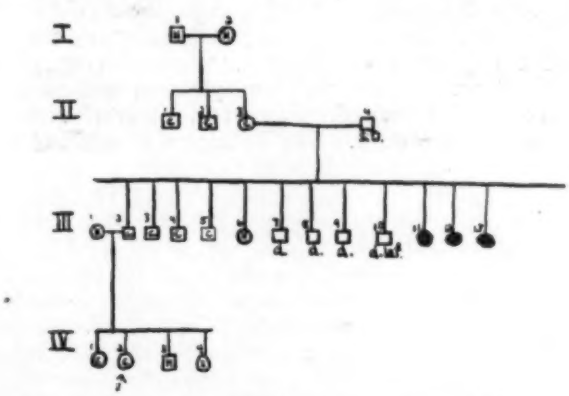

Fig. 3.—Arrow points to patient: solid circles, stillbirths or miscarriages; *N*, normal; *C*, chorea; *S. D.*, senile dementia; *D*, dead; *d. inf.*, died in infancy.

parent had chorea, and psychoses occurred or a definite neuropathic constitution was present in fourteen cases. An unusually definite hereditary trait is illustrated in case 12 (fig. 3).

The occurrence of so-called fright chorea was not extremely marked in this study. Case 6, however, is of interest in this connection. Likewise fright was marked in case 5, in which the choreiform movements immediately followed a fright in the dark. The child was sent by her mother to a bedroom to place some things under

3. Cobb, S.: Some Neurologic Aspects of Chorea, M. Clin. N. Amer. **4**: 1863 (May) 1921.

4. Ebaugh, F. G.: A Scheme for Classification of Delinquency in Children, Nation's Health **5**: 513-514 (Aug.) 1923.

5. Moleen, G. A.: The Nervous System as Influenced by High Altitudes, J. A. M. A. **67**: 477-480 (Aug. 12) 1916.

6. Osler, William: On Chorea and Choreiform Affections, Philadelphia, 1924.

the bed. The patient's brother had planned to go out that evening and the child did not know he was in the house. As the patient stooped to put the things under the bed she touched the foot of her brother who was lying on the bed. In her fright she screamed and ran out of the room and could not be quieted by her parents for some time. Her father noticed twitchings and shaking immediately. The child continued to laugh hysterically for a short time, and purposeless, incoordinated movements and weakness developed. Likewise she stammered, and this speech defect has grown progressively worse. Study of this case shows an attack of influenza at 3, whooping cough at 6, and a tonsil and adenoid operation in November, 1924. Poor social condition, insufficient diet and poor general health were considered to have contributed to the development of chorea, and the scare acted as a precipitating factor. In the remaining six children in which fright and psychogenic factors were considered, the physical observations were often of more importance. One should always consider an association of toxic and psychogenic factors in chorea.

TREATMENT

In the treatment of this group of children, one should emphasize complete rest and isolation. This means that all children showing choreiform movements should be taken away from school. A change from home environment should be made in many cases, such as is offered by sending children to rest homes in the country, preventories, and the like. Also, all foci of infection should be eliminated. A tonic routine consisting of arsenic may be used, although solution of potassium arsenite (Fowler's solution) was considered disappointing in this respect. We gave tryparsamide to several of these children, and the associated gain in weight and improvement in the blood picture indicated that this drug was of value. Tryparsamide was given in doses from 1.5 to 3 Gm. at weekly intervals for a course of six injections. Accessibility to sunlight, arrangements for school periods of short duration during convalescence, and the avoidance of physical and mental fatigue are to be advised. Faber and Barnett [7] recommend similar treatment. The Goodman treatment [8] by autoserum was not utilized in any of these cases, and I doubt whether it would be of any value. The use of autoserum in cases of epidemic encephalitis caused severe and untoward reactions, and we did not feel justified in using this method in the treatment of chorea, especially as statements in the literaure are very contradictory as to results obtained. Parents should be warned not to give these children too much sympathy and avoid the harm of leading them to believe that they are extremely sick. Since choreiform movements may often continue as a habit even after the cause of the twitchings has been removed, reeducation of the parents in this regard may prove of marked value. In treatment one should stress the importance of definite supervision, fundamental habit training, lack of discussion and concern by the parents before their children and a consideration of the totality of the child's reaction. The child's preoccupations concerning the period of lack of motor control should be thoroughly aired and explained to him, as they often may lead to withdrawal from contact with other children or the development of feelings of inferiority.

7. Faber, H. K., and Barnett, A. F.: The Value of the Convalescent Home in the Management of Chorea Minor, Arch. Pediat. **42**: 41-49 (Jan.) 1925.

8. Goodman, A. L.: The Autoserum Treatment of Chorea, Arch. Pediat. **33**: 649 (Sept.) 1916.

COMMENT

Burr [9] and Diffendorf [10] especially have called attention to the mental states of chorea and choreiform infections. These papers emphasized the psychotic aspects of the disease, especially the occurrence of characteristic delirious reactions. Diffendorf emphasizes particularly the strong neurotic and psychopathic constitution encountered and states that this defective heredity influence the forces, direction and development of the disease and that exciting causes play a similar rôle, as noted in the development of functional psychoses. Hoisholt [11] feels that the mental aspects of chorea are not grave but comments on the change in character, lapses of moral sense and memory disturbances. Bussiere and Rhea [12] make an analysis of 100 cases of chorea, emphasizing, however, almost entirely the toxic and rheumatic aspects of etiology. Cardiac involvement was found in 59 per cent of their cases, and only 3 per cent of the children examined did not give a history of tonsillitis and rheumatic fever. The recurrence of endocarditis in only three of our cases may suggest that there are types of chorea in which the nervous system is particularly affected instead of the characteristic tonsillitis-endocarditis syndrome. Few attempts at classification have been made of chorea in children. Macalister [13] speaks, however, of three types, the rheumatic or toxic type, the type related to inherited tendency, and a climacteric type. He speaks of the frequency of occurrence of chorea among left handed children, and states that in this group stammering is characteristic. The relation of chorea to puberty and to hyperthyroidism should be studied, since adult cases have been encountered. In this series of children, no overactivity of the thyroid was considered present. Fordyce [14] likewise emphasizes the factor of hereditary traits, and found that 60 per cent of his patients suffering from chorea demonstrated definitely hereditary background. He also emphasized the rôle of improper feeding in the development of chorea. Poynton [15] brings up the point that few children developed chorea during the air raids of London, stating that sudden conditions of fright and anxiety of this degree would have resulted in the development of cases of so-called psychogenic chorea if this type existed. In my study I feel that chorea should be considered from the standpoint of the reaction of the nervous system to repeated infections, to which may be added any psychogenic factors leading up to the development of chorea in the same way that mental upsets contribute to the etiology of the functional psychoses. There are few statements in the literature regarding the association of chorea with delinquency. Healy [16] mentioned a connection between the mental condition of chorea children and delinquency. Spaulding [17] reports two chorea cases in twenty-four delinquents examined, whose symptoms improved with frank discussion of their difficulties.

9. Burr, C. W.: The Mental State in Chorea and Choreiform Affections, J. Nerv. & Ment. Dis. **35**: 353-364, 1908.

10. Diffendorf, A. R.: Mental Symptoms of Acute Chorea, J. Nerv. & Ment. Dis. **39**: 161-172, 1912.

11. Hoisholt, A. W.: The Mental States Associated with Chorea, Am. J. M. Sc. **129**: 77-87, 1905.

12. Bussiere, H. C., and Rhea, L. J.: Acute Rheumatic Fever and Chorea in Children, Canad. M. J. **16**: 35 (Jan.) 1926.

13. Macalister, C. J.: A Classification of Chorea in Relation to Its Causes, Brit. M. J. **2**: 849-850 (Nov. 8) 1924.

14. Fordyce, A. D.: The Care of Choreic Children, Brit. M. J. **2**: 700-702 (Oct. 23) 1923.

15. Poynton, F. J., in Nelson's Loose Leaf Medicine **6**, chapter 21.

16. Healy, William: The Individual Delinquent, Boston, Little, Brown & Co.

17. Spaulding, Edith R.: An Experimental Study of Psychopathic Delinquent Women, Bureau of Social Hygiene, Chicago, Rand McNally & Co.

Chorea occurred in thirty-eight out of 604 admitted to the Colorado Industrial Home for Girls.

The frequency of history of chorea during childhood in patients admitted to the psychopathic hospitals indicates that this disease is a danger sign for the future and that these patients should be safeguarded in every possible way from the strain of either somatogenic or psychogenic nature. The history of our adult patients shows that choreiform movements may reappear in susceptible individuals with emotional disturbance.

SUMMARY AND CONCLUSIONS

In examination of a group of thirty-two children with chorea referred by school teachers, mental symptoms consisting of emotional lability and extreme fatigue were encountered with characteristic behavior disorders similar to those encountered in other organic conditions such as encephalitis and the post-traumatic group. Etiologic factors seem to point clearly toward toxic and infectious agents. Following the removal of the cause, choreiform twitchings may continue as a habit and should have treatment from a psychiatric standpoint. Hereditary influences were found to be very marked in this series, and occurred in 43 per cent. Treatment consisted of rest, isolation, removal from school, efforts to instill self-confidence in the children, and avoidance of discussions and oversympathy by the parents.

ABSTRACT OF DISCUSSION

DR. GEORGE A. MOLEEN, Denver: I was struck by the incidence of chorea which comes to a clinic in comparison to the number of cases one finds in private practice. A few years ago I reviewed 2,600 cases to find about twenty-seven or twenty-eight cases of aute chorea. Dr. Ebaugh's thirty-two cases are drawn within a year's time from 600 patients. We should distinguish the types of chorea when evaluating the psychopathic conditions, especially separating those which we know definitely to be based on an organic change in contrast to those which, as far as we are able to determine up to the present state of our knowledge, are the result of irritability and fatigue. Such reactions in the acute types of chorea are in perfect consonance with what we find in the psychopathic symptomatology. The influence of other factors has long been recognized in association with the constitutional and the infective possibilities in the development of this disease. Some years ago I observed the irritability in the nervous system, as a whole, as a result of anemia; and that anemia was more effective the higher the altitude, from the fact that the higher one goes the more hemoglobin is required and the greater the number of red cells required, and the individual who is unable to adapt himself to altitudinal requirements therefore suffers a relative anemia and consequently the irritability resulting from such anemic conditions. We find, therefore, those emotional instabilities here as well as in the constitutional psychopaths. The disturbances of attention probably are often responsible for the failure of concentration, just the same as disturbances in attention and preoccupation may give rise to a false conception of a loss of memory. The author did not get as far as his treatment. I should therefore like to make one point with reference to the treatment: I wish to raise an objection to operating for foci of infection during the active stages of these conditions. In my opinion it is a mistake to operate on tonsils or to do any extensive extraction of teeth in a case of acute chorea, because it emphasizes the symptomatology, it disseminates the infection, and probably leads to more disastrous results. Dr. Ebaugh's paper is well worthy of consideration from the standpoint especially of the fatigue syndrome that might be brought about by the chorea cases, to separate carefully from this group those which are inherited psychopaths as well as those which come under the encephalitic class or those of the Huntington type in which more definite organic changes take place.

DR. ROY P. FORBES, Denver: Dr. Ebaugh has presented a rather new conception of chorea. The generally accepted conception of the etiology of chorea has emphasized the rheumatic diathesis, and there is no doubt that many of the severe cases are preceded by tonsillitis or arthritis and associated with rheumatic endocarditis. Those are apt to be the cases in hospital practice, the very sick patients, and the material in Dr. Ebaugh's paper is of an entirely different sort. One is impressed by the relative infrequency of rheumatic endocarditis in this series—only about 10 per cent as contrasted with the 40 or 50 per cent mentioned in textbooks. In many of these mild cases the patient would not have been taken to the outpatient department, pediatric service, or to a hospital, and the diagnosis never would have been made. Fatigue and the psychogenic factors must be very important in these mild choreas discussed by Dr. Ebaugh. The high incidence at higher altitudes deserves further study. It is quite possible that fatigue and certain dietary factors that Dr. Ebaugh mentioned may have some bearing on the incidence of chorea at high altitudes.

DR. THEODORE DILLER, Pittsburgh: Only a few days ago I saw a little girl, 11 years old, who presented movements which were choreiform, more or less, yet not typical, and the question arose as to whether it was a case of chorea or whether it was a case of beginning epidemic encephalitis, a very important question indeed. I am not quite clear as to what Dr. Ebaugh said on this point. I wish he would say a word or two on this in his closing remarks.

DR. SIDNEY I. SCHWAB, St. Louis: A good deal of the behavior anomalies that have been discussed as possibly due to some psychopathic inheritance may be interpreted from the standpoint of the effect on the child of the presence of choreiform movements. Many of the children who have chorea, especially those treated in outpatient departments, have been at the beginning of their disease badly handled by their family. Very often the family is unaware that the child is sick. Some of these patients have been punished, threatened and scolded because the parents considered that the child's awkwardness was the result of the child's carelessness or lack of attention. It is not uncommon to find children with chorea who have been punished at home, locked up in a dark room or spanked, and the child naturally revolts against this unmedical handling of his case and some of the anomalies of conduct are reflected in this attitude. Some of the types of conduct which appear frequently are not due to anything in the child's inheritance but are simply due to the disease itself. I should like to ask the author whether he has observed that the average run of children with chorea belong to a rather unusual mental group. I have been struck very often with the fact that many of these cases are bright children who stand high in their school and do not belong to the dull or backward types. There is here, then, the item of the relation between chorea as an infectious disease and the effect of this disease on the nervous system; that is, the relation of any type of infection—not only chorea, but others also. It seems to me that in considering the question brought out by the reader it is essential to consider the psychic situation in the choreiform child due to the disease itself and not to assume that the child who shows abnormal traits of conduct is necessarily and fundamentally an abnormal child from the mental point of view. It is easy to consider the temporary abnormal psychical condition as being due to something inherent in the child rather than the result of the immediate happening or circumstances which in this case happens to be an acute infectious disease.

DR. FRANKLIN G. EBAUGH, Denver: I wish to emphasize the point that when we consider chorea we should consider the integration of the entire child. If we make a complete study from a neuropsychiatric point of view of chorea in children we must take into consideration all toxic factors, all psychogenic and all organic factors. I think that will broaden our conception of this disease, which certainly presents very definite and significant neuropsychiatric factors. Regarding the questions asked: The motor symptoms of chorea do cause much distress on the part of the child. This certainly makes a very definite impression on his per-

sonality and is closely related to the development of the conduct disorders present, very similar to what we see in acute epidemic encephalitis and in the behavior disorders following head injuries in children. One of these children happened to be punished. It is rather striking that the parents punished this child repeatedly until finally the awkwardness of the child in the first symptoms of chorea resulted in severe burns, and then they considered he was a sick child and treated him as such from that time on. Many of these children were precocious. One child had an intelligence quotient around 124. This child was advanced one or two years in school. Sachs has emphasized this feature of mental precocity in choreiform children. Regarding Dr. Diller's question, there are certainly organic types of chorea; postencephalitic types are seen frequently. One youngster had a typical ophthalmoplegic onset and course of encephalitis, including spinal fluid changes. I want to reemphasize the fact that first the parents should be warned not to give children too much sympathy, and avoid the harm of leading their children to believe they are extremely sick. Since choreiform movements may often continue as a habit even after the cause of the twitchings has been removed, reeducation of the parents in this regard may prove of marked value. In treatment, one should stress the importance of definite supervision, fundamental habit training, lack of discussion and concern by the parents before their children, and a consideration of the totality of the child's reactions. A child's preoccupations concerning the period of lack of motor control should be thoroughly aired and explained to him, as they may often lead to withdrawal from contact with other children or to a development of feelings of inferiority.

THE PATHOLOGIC EXAMINATION IN CAVERNOUS SINUS THROMBOSIS

AS A GUIDE TO THE DIAGNOSIS, PROGNOSIS AND TREATMENT *

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One hundred and five years ago Duncan, a pathologist, discovered a septic thrombus within the cavernous sinus. Eighteen years later Vigla made the first clinical report of a case. Since then this fatal complication has been so much overlooked that fewer than three hundred cases have been recorded.

The picture of this disease is so striking and its relation to adjacent foci is so constant that one wonders why it has gone undiagnosed. Two factors may help to explain the lack of recognition of this lesion: (1) the peculiar structure and the hidden position of the cavernous sinus, and (2) the prompt and fatal complicating meningitis.

Nature seems to have been aware of her mistake when she constructed the cavernous sinus, because she hid it so carefully that not only was man late in finding it but he has never been able to attack it surgically with any success.

ANATOMY

Lying snugly along each lateral side of the pituitary body is this cavernous meshwork about 10 mm. long by 5 mm. wide (fig. 1). It is connected with its fellow by a group of veins crossing in front of and behind the pituitary. These interlocking venous channels explain the early and almost constant bilateral involvement.

The sinus is formed like the other intracranial sinuses by a separation of the two layers of the dura, and through it passes most of the venous return of the face by way of the ophthalmic vein.

Internally the cavernous connects with the superior and inferior petrosal sinuses, so that it is menaced by thrombi extending from that most frequently thrombosed intracranial channel, the sigmoid sinus. Passing directly through this small venous network in a twisting fashion is the internal carotid artery. The fourth and sixth cranial nerves usually pass through the sinus, so that their involvement may be of considerable diagnostic value.

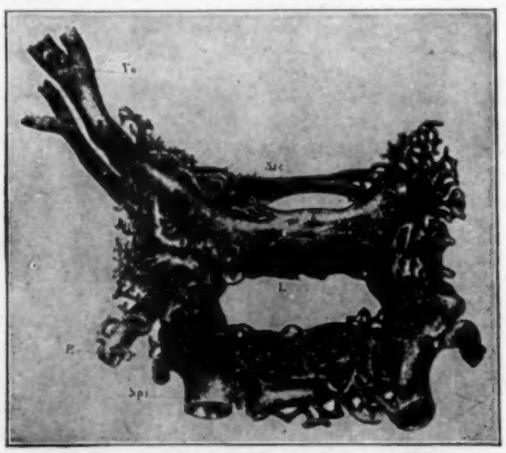

Fig. 1 (from Whitnalls' Anatomy of the Orbit).—Corrosion preparation of the cavernous sinuses of a child (from Langer, 1885). The vessels are represented hollow, which would indicate a drawing and not a photograph of the actual injection mass. *Vo*, the superior ophthalmic vein, with the inferior vein below it; *Sic*, anterior intercavernous sinus; *L*, position of the hypophysis cerebri or pituitary body; *E*, emissary vein leading through the foramen ovale into the pterygoid plexus; *Spi*, inferior petrosal sinus.

The following case reports illustrate the course of this disease:

CASE 1.—J. W. N., a laboratory assistant, aged 26, noticed an infected hair follicle on his upper lip. He pulled out the hair, squeezed the pustule, and thought nothing more about the infection. Three days later he was admitted to Research Hospital with a temperature of 101 F. and a cellulitis of the right upper lip. This cellulitis gradually extended, and within three days involved the entire right side of his face. The fever rose to 103 F., and at this time the diagnosis of erysipelas was made. Within ten days the right eye began to bulge and he developed pain in the upper right chest. Twenty-four hours later the left eye protruded. He became delirious at the onset of the eye symptoms, and died forty-eight hours later.

There was a marked bilateral chemosis and a moderate bilateral choked disk. He had no chills. The white blood count was 14,000.

Necropsy revealed a thrombophlebitis of the superficial veins of the entire right side of the face; thrombophlebitis of the right ophthalmic vein and a septic bilateral thrombosis of the cavernous sinus; a purulent leptomeningitis; multiple septic infarcts of both lungs, and pleurisy with a purulent exudate.

The infecting organism in the cavernous sinus was staphylococcus. The route of infection to the cavernous sinus was by way of the supra-orbital, angular, facial and ophthalmic veins.

The most frequent foci of septic thrombosis of the cavernous sinus are infections about the nares and the upper lip.

Four factors play an important part in these foci:

1. The early and frequent trauma.
2. The absence of subcutaneous fat on the upper lip.
3. The active muscular supply of this region.

* Read before the Section on Pathology and Physiology at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

4. The inability of the veins that drain this area to collapse.

In spite of the early recognition of the seriousness of this lesion, there was no way to prevent its progress.

CASE 2.—E. N., a man, aged 19, developed a peritonsillar abscess following a mild sore throat. Incision in the right supratonsillar fossa was followed twelve hours later by a swelling and protrusion of the right eye (fig. 2).

On admission to St. Margaret's Hospital, he was unconscious. He had a temperature of 103 F., 18,600 leukocytes, a bilateral exophthalmos and chemosis, normal eyegrounds, and a severe epistaxis. He had no chills. Two days following incision of the peritonsillar fossa, he died. This was fourteen days from the onset of the sore throat, and thirty-six hours after the eye involvement.

Necropsy revealed a septic thrombus in both cavernous sinuses; multiple septic infarcts of the lungs; septic infarcts of both kidneys, heart muscle and spleen, and a purulent leptomeningitis. The infecting organism was staphylococcus. The route of this infection was by way either of the pharyngeal plexus through the carotid canal or of the pterygoid plexus through the foramen ovale.

Just what took place at the time of the peritonsillar incision, I am unable to say, as I did not see the patient until he entered the hospital eighteen hours before death. He had a small incision over the right supratonsillar fossa, which was draining a moderate amount of thin yellow pus.

Fig. 2 (case 2).—Appearance just after death: right eye bulging and right nares filled with a blood clot.

Cavernous sinus thrombosis following peritonsillar abscess is not extremely rare. Probably the operation broke through the posterior defensive wall and allowed the infecting organisms to reach the sinus by the route described. The epistaxis was due to the blocking of the ethmoidal veins draining into the cavernous as described by Zuckerkandl.

CASE 3.—E. L., a school boy, aged 17 years, complained of a sore throat and headache. This was on Saturday, June 13, 1925. Sunday his headache and sore throat were worse, but he was able to go to a nearby drug store to purchase medicine.

On Monday his headache became so severe that a physician was called. He found the patient with a temperature of 100.5 F. and inflamed, small tonsils. The eye examination and nerve reflexes were normal.

The following morning at 5 o'clock, when the boy's mother called him to accompany her to a train, she found him unconscious. His right eye was swollen and protruding. He was admitted to St. Margaret's Hospital six hours later with a temperature of 106 F., moderate rigidity of the neck, a bilateral exophthalmos and chemosis, dilated pupils, which reacted to light, and normal eyegrounds (fig. 3).

The white blood count was 8,000. The spinal fluid cell count was 12,400, and gram-positive extracellular diplococci were found in direct smears. He died that evening at 5:20, four days from the onset of his sore throat, and sixteen hours from the onset of his eye symptoms.

No necropsy was performed.

No trauma could be associated with this complication. The route of this infection was apparently the same as in case 2.

CASE 4.—A man, aged 39, consulted his physician, Jan. 27, 1926, on account of pain in his left ear. Examination revealed a red drum with no bulging. Phenol and glycerin drops were prescribed, and he worked the following day without discomfort. As the earache returned twenty-four hours later, the drum was incised, followed by a free purulent discharge and prompt relief. Cultures from this discharge showed staphylococci. That evening when he retired he was feeling well, but the next morning when his wife called him she found him unconscious. There was a slight bulging of the left eye. Within three hours the right eye became involved. He did not regain consciousness, and died the following day at noon.

Fig. 3 (case 3).—Appearance one hour before death: marked bulging of both eyes.

He had no chills; the white blood count was 18,600; the spinal fluid was cloudy, and cultures showed staphylococci. His temperature reached 105 F. prior to death.

Necropsy revealed bilateral septic thrombosis of the cavernous sinus, acute purulent leptomeningitis, thrombosis of the superior and inferior petrosal sinuses, and thrombosis of the left sigmoid sinus. There were multiple septic infarcts in the lungs, kidneys, spleen and heart muscle.

Cavernous sinus thrombosis following mastoiditis and a sigmoid sinus thrombosis is not unusual. The route of infection was direct by way of the superior and inferior petrosal sinuses. Such a complication following so soon after such a slight ear disturbance is very uncommon.

Fig. 4 (case 5).—Drawing made at onset, one week prior to death; eye involvement remained unilateral.

It is difficult to understand why the cavernous sinus is not more frequently involved secondary to thrombosis of the sigmoid. The extension is direct and unobstructed.

CASE 5.—E. G., a man, aged 40, a hospital orderly, was admitted to St. Luke's Hospital on account of a severe cold and a temperature of 101 F. Three days later I instructed my intern to have the patient see a dentist when he recovered. He overheard the conversation, and on his own account left the hospital that afternoon and had the first and second lower left molars extracted and the sockets curetted. Twenty-four hours later he had a severe chill, followed by a temperature of 104 F.

He was readmitted to the ward, a very sick man. He had daily chills with sharp temperature fluctuations between 98

and 105 F. The leukocyte count was 16,000. Five days after the tooth extraction, the left eye began to bulge and the left temporal superficial veins became distended (fig. 4).

There was a moderate chemosis of the left eye. The eyegrounds were normal, and there was no impairment of motion or vision in this eye. At this time I made a diagnosis of septic thrombosis of the cavernous sinus, secondary to the curettement of the tooth socket. Two days later this bulging left eye began to recede and the temporal venous engorgement disappeared (fig. 5).

The septicemia continued and he developed metastatic infarcts of both elbows, and a pleural effusion in the right chest. Five hundred cubic centimeters of straw colored fluid was aspirated. Cultures from the blood yielded hemolytic streptococci. Because of the recession of the left eye and the noninvolvement of the right eye and the general septicemia, I withdrew my diagnosis of cavernous sinus thrombosis.

Twelve days after the tooth extraction the patient developed all of the signs and symptoms of meningitis and died twenty-four hours later. The spinal fluid was cloudy and contained streptococci. There was no recurrence of eye symptoms.

Necropsy revealed multiple lung abscesses, metastatic infarcts of the kidneys, spleen and heart muscle; pleurisy of the right side with purulent exudate; abscesses in both elbows, and a complete suppurative liquefaction of the thrombus in the left cavernous sinus. The right cavernous sinus was not thrombosed.

Fig. 5 (case 5).—Appearance just after death: There had been recession of the bulging left eye; the right eye was never involved.

Fig. 6 (case 6).—Good example of extreme proptosis; appearance six hours before death.

This unusual course presents the possibility of a spontaneous recovery of a patient with a septic thrombus of the cavernous sinus As he did develop the usual and fatal complication, i. e., meningitis, this case does not offer any proof that there is ever recovery from a septic thrombosis of the cavernous sinus.

The early breaking down of the thrombus increased the severity of the general septicemia and its complications. The route of infection was by way of the internal maxillary vein and the pterygoid plexus.

The obvious cause of this fatal complication was the curettement of the tooth sockets in the presence of an acute nasal infection.

CASE 6.—H. G. K., a boy, aged 5 years, was admitted to St. Mary's Hospital with a bulging left eye, a temperature of 105 F., a cellulitis of the left lower jaw, and all the signs of a meningitis. The right eye became involved twelve hours after the left. There was a bilateral chemosis (fig. 6).

Nine days before, he had complained of the toothache. His father chewed some cloves, which he placed in the cavity between the first and second lower left decidual molars. This gave the child no relief and he was taken to a dentist the following day, who cleaned out the cavity and put in a treatment.

The toothache continued and the left lower jaw began to swell. He was then taken to another dentist, who made an incision into the alveolar process of the left jaw at the base of the infected tooth. Immediately after this the swelling of the jaw increased and his temperature arose to 105 F.; he had no chills but became very sick. He died nine days after the onset of his toothache, and five days following the operative procedure.

At necropsy a septic thrombus was found in both cavernous sinuses. There was a purulent leptomeningitis and metastatic infarcts of the spleen, liver, kidneys and heart. Examination of the left half of the mandible, which was removed at necropsy, showed an acute osteomyelitis.

The route of the infection was by way of the alveolar and internal maxillary veins and the pterygoid plexus. The infecting organism was staphylococcus.

Dental sepsis following infection of deciduous teeth is quite rare. This is the youngest patient that I have found reported with cavernous sinus thrombosis following dental infection. The trauma of the operation, no doubt, produced the fatal complication.

CASE 7.—E. T., a girl, aged 16, had a temporary filling placed in a cavity of her right second lower molar, Dec. 30, 1923. She was instructed to return the following day, but failed to do so.

Fig. 7 (case 8).—More extensive involvement of right eye; just prior to death, the left eye showed equal involvement; the rubber drain is inserted between the eyebrows.

Two days later she developed a severe toothache and went to her dentist, but found him away on account of a holiday. That night she suffered intensely with pain, and the right side of the face became swollen. When taken to the hospital, her temperature was 104 F. and the leukocyte count, 9,600. The infected tooth was extracted, but the socket was not curetted.

Twelve hours later she became delirious and there was a marked protrusion of the right eye. She died forty-eight hours later. The left eye showed no involvement and she had no chills. The infecting organism was staphylococcus.

Necropsy revealed septic infarcts of both lungs; a bronchial pneumonia; a fibrous turbid exudate in both pleural cavities; small abscesses in the right kidney; septic infarcts near the septum of the heart; thrombophlebitis of the facial and ophthalmic veins; a right orbital abscess; a septic thrombosis of the right cavernous sinus, and a localized temporal purulent meningitis.

As the cellulitis of the right side of the face had already developed prior to the tooth extraction, it is unfair to blame the trauma for this complication. The early pent up infection within the infected tooth was probably responsible for the fatal termination.

CASE 8.—J. K., a boy, aged 14, was admitted to St. Luke's Hospital with a swelling over his entire forehead. Two weeks

before he had bumped heads with a playmate. The injury was so trivial that it was forgotten until twelve days later, when he had a severe chill and a temperature rise to 104 F.

At this time the supraorbital cellulitis developed. He had daily chills and a white blood count of 20,000. Fourteen days after the injury he developed a right exophthalmos. Within twelve hours the left eye became involved (fig. 7). The supra-orbital swelling was incised, but there was very little purulent drainage. The bleeding was difficult to control.

Symptoms and signs of meningitis developed twenty-four hours after the swelling of the eyes, and he died nineteen days following the head injury. The infecting organism was the staphylococcus. The route of infection to the cavernous sinus was the supra-orbital veins and the ophthalmic.

No necropsy was performed.

The operative procedure in this case had no bearing on the outcome. The infection had already extended into the cavernous sinus. The profuse bleeding was due to the obstructed venous return.

He left the hospital ten days later, and the physical examination eight months following his dismissal gave normal results.

This patient did not have a cavernous sinus thrombosis, although he had nearly all the clinical signs. His mania was apparently due to a septicemia. Any attempted operative procedure on the cavernous sinus would certainly have been fatal and altogether uncalled for.

CASE 10.—Mrs. V. M., aged 26, had her tonsils removed previous to recovery from an acute sore throat. She promptly developed a facial erysipelas. Supra-orbital edema was mistaken for an abscess, and an incision was made through the left upper lid. This area became infected and markedly swollen. She became delirious, and I was called to see her as a case of cavernous sinus thrombosis (fig. 8).

Presumably the route of infection was by way of the ophthalmic vein direct to the cavernous sinus. While talking to her mother I elicited the fact that the patient had had an intermittent discharge from her right ear since the removal of a small collar button twelve years before. On examination I found a tender right mastoid and a pulsating purulent discharge through a central drum perforation.

PATIENTS PRESENTING SYMPTOMS AND SIGNS OF CAVERNOUS SINUS THROMBOSIS

CASE 9.—L. T., a negro, aged 21, was admitted to St. Margaret's Hospital, April 15, 1923. Two days before he had stepped backward from a loading dock and caught the back of his head on a meat hook. A collodion dressing was applied and he was sent to the hospital two days later with a marked cellulitis of the entire left side of the scalp.

His temperature was normal, but he complained of severe pain down the back of the neck and the left side of the head. Three days later his temperature rose to 100.6 F.; he required morphine for pain and became very restless.

The cellulitis extended to the left eye, which appeared to bulge. He became so violent that he was restrained.

A blood culture taken at this time was positive for short chain streptococci. The spinal fluid was clear, with a marked increase of pressure and 27 cells per cubic millimeter. He had no chills. Roentgenograms of the head were negative.

Fig. 8 (case 10).—Appearance two weeks prior to death: The eyes are swollen, but the bulging is not typical of cavernous sinus thrombosis; the submental swelling is inflammatory and not fat.

Fig. 9 (case 10).—Appearance three hours after death: healed scar over left upper lid; absence of orbital and submaxillary swelling.

I made a diagnosis of cavernous sinus thrombosis which had taken place by way of the diploetic veins through the sphenoparietal sinus, and secured permission from his wife for a necropsy. Much to my surprise, within four days the swelling about the left eye began to recede. The temperature subsided, he became more rational, and an abscess developed at the site of the scalp injury, which was opened and drained about 2 ounces (60 cc.) of yellow pus.

This mastoid was opened. There was moderate bony destruction, and large compartment cells were filled with yellow pus. The sigmoid sinus was explored, but no thrombus was found.

Summary of Eight Cases of Cavernous Sinus Thrombosis

Age	Sex	Focus	Trauma	Eye Involvement	Eyegrounds	Fever		Chill	Organism	Blood Culture	Spinal Fluid	High White Blood Count	Death		
						Sustained	Septic						From Onset	After Eye Involvement	Necropsy
26	♂	Upper lip	Yes	Both	Moderate bilateral choked disk	Yes, 103 F.	.....	No	Staphylococcus	Negative	Cloudy	14,000	14 days	72 hr.	Yes
19	♂	Right tonsil	Yes	Both	Normal	Yes, 103 F.	.....	No	Staphylococcus	Negative	Cloudy	18,000	14 days	36 hr.	Yes
17	♂	Tonsils	No	Both	Normal	Yes, 106 F.	.....	No	Staphylococcus	Positive	Cloudy	8,000	4 days	16 hr.	No
30	♂	Left middle ear	Yes	Both	Normal	Yes, 105 F.	.....	No	Staphylococcus	No	Cloudy	18,000	5 days	36 hr.	Yes
5	♂	Lower left molar	Yes	Both	No examination	Yes, 105 F.	.....	No	Staphylococcus	No	Cloudy	12,400	9 days	40 hr.	Yes
16	♀	Lower right molar	Yes	Right	Right choked disk	Yes, 104 F.	.....	No	Staphylococcus	Positive	Cloudy	9,600	7 days	48 hr.	Yes
40	♂	Lower left molar	Yes	Left	Normal	.....	98 F. 105 F.	Yes	Hem. streptococcus	Positive	Cloudy	16,000	13 days	5 days	Yes
7	♂	Forehead	Yes	Both	Normal	.....	97 F. 104 F.	Yes	Staphylococcus	Positive	Cloudy	20,000	10 days	42 hr.	No

Following the operation her temperature subsided for four days, and it looked as if she would recover. A localized abscess formed over her left eye and was drained. The orbital cellulitis disappeared, and the erysipelas faded. At the end of four days the septic temperature returned, the urine contained blood, pus and many granular casts, and she died four weeks later (fig. 9).

Necropsy revealed a normal brain, a normal dura, normal cavernous sinuses, a phlebitis of the right sigmoid sinus, which had been opened, and a thrombus, which was partially broken down and apparently was postoperative.

There was no thrombus in the jugular bulb or the torcular end of the sinus. The kidney revealed her final cause of death; i. e., acute streptococcic nephritis.

This patient presented the most typical clinical picture of cavernous sinus thrombosis that I have ever seen. The only thing which aroused my suspicion that it was not a cavernous sinus thrombosis was the fact that the eye condition had been present so long without a complicating meningitis. In addition to her acute complications I also learned that she was addicted to morphine. Her delirium and restlessness was quickly controlled by a fourth-grain (16 mg.) hypodermic. This added some confusion in the early diagnosis of her mental disturbance. Had she not developed the kidney complication I am certain she would have recovered. Operative intervention in the cavernous sinus would easily have been indicated by the erronous diagnosis.

CONCLUSIONS

My observations of septic thrombosis of the cavernous sinus seems to warrant the following conclusions:

1. Ordinary and trival infections are usually the primary foci.
2. Some form of trauma is usually associated with these primary infections.
3. The thrombosis takes place by direct extension of the thrombophlebitis.
4. The offending organism is most frequently the staphylococcus.
5. The temperature is sustained and gradually increases, and there is usually an absence of chills.
6. Meningitis follows so closely after the eye symptoms develop that septic thrombosis of the cavernous sinus is a nonsurgical complication.
7. Reported recoveries were probably errors in diagnosis.
8. Meningitis and septicemia do not satisfactorily explain the rapid termination.

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ABSTRACT OF DISCUSSION

DR. FENTON B. TURCK, New York: Seldom do we find in clinical experience such perfect analogy with the experimental facts as are shown in Dr. Dixon's cases. Mutilation of tissue incident to the surgical operations were shown to be almost immediately followed by coagulation of tissue fluid and smaller vessels adjacent to the trauma, and by extension this clotting continues to the larger veins. The clotting of blood is due to the tissue substance released by mutilation of the tissues, and occurs whether infection is present or not. In the Section on Laryngology, Otology and Rhinology I demonstrated that hyperviscosity to complete coagulation is a constant occurrence following all injured tissue. Any excess of this released tissue substance causes severe pathologic changes from local thrombosis to complete shock and death. Experimental biology first established this scientific fact; then the clinical application was made in the Great War on such a gigantic scale as to establish it for all time. Mutilation of plant tissue produces the same effect that occurs in animal tissue. The mutilation liberates the cell component from the tissue cells. My experiments have shown that whenever the cells are injured the specific cell contents are immediately released and in excess cause an aggregation of the fluid particles and death of the animal. These reactions experimentally produced in animals were found to be identical with those produced in patients. This cell exudate I named cytost (cytos, a cell). The liberation of this electropositive stimulus, cytost from bruised, lacerated or mutilated tissue cells causes agglutination with the phenomena of congestion, vascularization, and inflammation resulting in stasis. This hyperviscosity of cell protoplasm is rapidly transmitted by the action current to the capillaries and from them on to the larger main vessels. These scientific facts were known before the Great War, but it was not until experience such as shown in Dixon's cases that it was later generally applied.

ACRODYNIA IN ADULTS*

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THE JOURNAL has twice called the attention of the American medical public, editorially,[1] to the continued presence of acrodynia in the United States and the desirability of publicity in connection with it. This is all the more to the point because it is not asking too much in the way of diagnosis, for the cutaneous phase of the syndrome is so distinctive—almost pathognomonic—that it is calculated to lead the practitioner at once to the correct diagnosis. Thus, the first set of symptoms is the general, consisting of the gastro-intestinal and neurologic, and the second, the cutaneous. To repeat, the latter are so distinctive that they are calculated at once easily to remove the condition clinically from a large, more or less indiscriminate group of possible avitaminoneurologic states, even though it may be given to one rarely to see a case. The red, painful palms and soles of the "raw-beef" type are so unusual as almost per se to rule out the other diagnostic possibilities. Whereas there are only two cases to be reported herewith (only one in detail), they substantiate the opinion of the editor that the disease is more common than is supposed; they are further worthy of report because they occurred in adults.

Fig. 1 (case 1).—Distribution of skin lesions.

So-called acrodynia or erythredema has been described as a clinical entity occurring in infants and young children, usually under the age of 7. Since Swift[2] reported fourteen cases in Australia in 1914, many observers in America and Europe have seen the same syndrome, and now some 230 cases have been recorded

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1. Is Acrodynia a New Disease? Editorial, J. A. M. A. **85**: 1225 (Oct. 17) 1925; Acrodynia Erythredema or Swift's Disease? ibid. **86**: 1132 (April 10) 1926.
2. Swift, H.: Erythredema, Lancet **1**: 611, 1918.

in the literature. In recent papers, Foerster [3] and Rodda [4] summed up the clinical picture as manifesting itself by three general groups of symptoms, occurring in varying degrees and combinations; viz., (1) general or gastro-intestinal, as anorexia, loss of weight, weakness, usually pronounced constipation, and occasionally loss of teeth; (2) neurologic, as hyperirritability, paresthesia, anesthesia, loss of reflexes, photophobia and paresis;

Fig. 2 (case 1).—Appearance of patient two weeks after admission: decided improvement. The palms and soles were definitely swollen on admission, but the swelling had disappeared by the time the photograph was made.

(3) cutaneous. The skin manifestations are usually of two types; viz., (*a*) general, a diffuse erythematous rash over the entire trunk, usually involving the extremities and often preceded by a profuse perspiration; it has been variously designated and is responsible for the name "pink disease"; (*b*) local, giving the characteristic appearance on the hands and feet, as erythema, swelling, cyanosis, coldness, ulceration and desquamation.

Enough of the foregoing symptoms were exhibited by the following two patients to place them definitely in this category, particularly in view of the features of the palms and soles.

REPORT OF CASES

CASE 1.—M. R., a man, aged 52, colored, a resident of Pennsylvania, born in South Carolina, a laborer, seen at the University Hospital in June, 1925, complained of oozing, swelling and burning of the hands and feet—some of the face. The trouble was of three weeks' duration and accompanied by such irritability, discomfort, anorexia and insomnia that he had become emaciated, having lost about 40 pounds (18 Kg.). Rubbing the hands and feet afforded some relief.

He had been married sixteen years. His wife and six children were living; four other pregnancies had terminated in two miscarriages and two stillbirths. The rest of the family history was irrelevant. In childhood he had had measles, mumps and chickenpox, and in early adult life typhoid, rheumatic fever and gonorrhea. He had had his left eye removed following a gunshot wound. He had worked as a laborer nine hours a day until the onset of his present illness.

The patient was poorly nourished, and was in marked distress on account of sore, swollen, "beefy-raw" appearing hands and feet, with less pronounced involvement of the face. The hands and feet, especially, presented large erythematous, exuding erosions, and while there was marked swelling and apparent edema, there was no pitting on pressure. The painful hands and feet could not be regarded as expressions of a multiple peripheral neuritis, because there was no tenderness over the nerve trunks leading to these parts. There had been no dyspnea, but he could not walk on account of painful, tender, swollen feet. The skin of the trunk and the remaining portions of the extremities exhibited a diffuse maculopapular dermatitis, associated with a mild pruritus (figs. 1, 2 and 3). He was in such obvious distress that he was admitted to the hospital.

The ears were normal; the pupil of the remaining eye reacted to light and in accommodation. A beginning cataract impaired the vision slightly, but there was no photophobia. Opening the mouth was accompanied by some pain; the lips were slightly swollen; the tonsils were small and atrophic. All teeth were missing except three in the lower jaw, and these were in poor condition. The mucous membranes of the nose and pharynx were decidedly injected; there were a few pigmented spots on the buccal surfaces. Examination of the neck was negative as to masses and pulsations. The chest was slightly emphysematous, with expansion impaired; there were no changes in tactile fremitus or in percussion. There were coarse râles over the large bronchi, which were associated with pronounced cough and fever (100 F.). The heart was definitely enlarged to the left, with a rather rough systolic murmur at the apex, transmitted to the axilla. Over the aortic area a soft diastolic murmur could be heard, transmitted down the sternum. The pulse was accelerated and of the heaving bounding type described by Corrigan; the systolic blood pressure was 150; diastolic, 0. The abdominal muscles were well developed. The reflexes were normal.

Nasal smears and cultures for *B. leprae* were repeatedly negative; urine examination for arsenic was negative. The red cell count was 3,600,000; leukocytes, 5,600; hemoglobin, 65 per cent. The differential blood stain showed neutrophils, 69 per cent; lymphocytes, 23 per cent; large lymphocytes, 6 per cent; transitionals and eosinophils, 1 per cent each. The blood Wassermann reaction was repeatedly negative; the urine had an occasional trace of albumin. No animal parasites were found in the feces, and yeast cells were singularly few. Cultures from feces on glucose agar and conservation mediums yielded no fungi, save one or two colonies, which were considered a contamination. Smears from the mouth showed no fungi.

Fig. 3 (case 1).—The erythematous, scaly, swollen soles.

On account of the reputed relationship between acrodynia and pellagra, we repeated in a small way the photosensitization tests on this patient that have been performed in pellagra. A piece of adhesive tape, containing windows, was kept on the forearm (fig. 1) and exposed to sunshine for several successive days. Results were negative.

In the hospital, the patient was febrile for seven days, the temperature being 100 F. on admission, rising to 104 that evening and remaining between 101 and 102.2 until the seventh day, and then gradually returning to normal on the twelfth

3. Foerster, H. R.: Erythredema Polyneuritis, Arch. Dermat. & Syph. **12**: 17 (July) 1925.
4. Rodda, F. C.: Acrodynia, Am. J. Dis. Child. **30**: 224 (Aug.) 1925.

day of hospitalization. The pulse rate was disproportionately increased, the most rapid being 122 on admission, and never below 90 until two days before discharge from the hospital, staying around 76 thereafter.

The treatment consisted of absolute rest in bed, a forced diet of fresh fruits and fruit juices (especially orange), and green vegetables, symptomatic medication, and soothing applications locally. Both general and local conditions responded

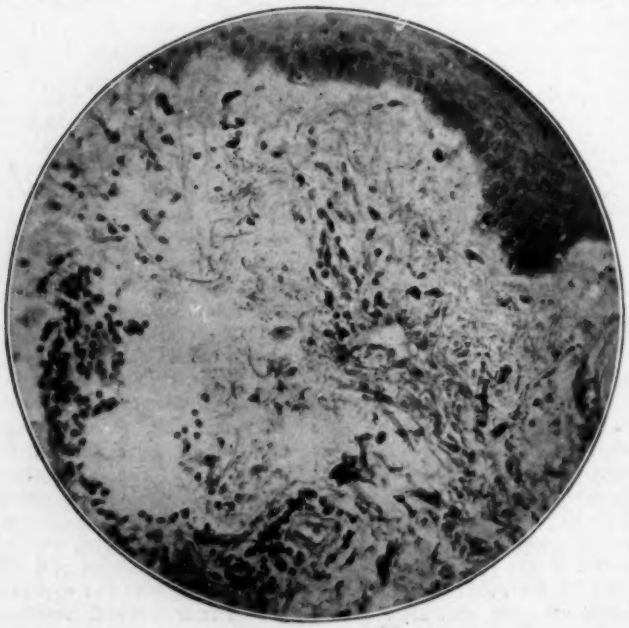

Fig. 4 (case 1).—Skin from forearm, illustrating edema in papillae.

to this regimen, and the patient was discharged from the hospital as cured at the end of thirty days. He was able to resume light work as a golf club attendant. Immediately after discharge, a bulla occasionally developed on the heel; but when last seen, forty days after discharge, all symptoms had disappeared. There was no recurrence of cutaneous or constitutional symptoms up to four months later, when we were informed that he died at home with apoplexy; no necropsy was performed.

Histologic examination of a slightly erythematous patch from the lower forearm was made by Dr. Fred D. Weidman, who reported that the epiderm was normal except for a certain loss of pigment which may have been the result of the underlying edema. The essential change in the corium was an edema, most marked in the papillary and subpapillary region and around the blood vessels (figs. 4 and 5). Associated with this was a moderate amount of fibrin and goodly numbers of lymphocytes. A solitary, minute focus of necrotic collagen was discovered adjacent to one of the capillaries, but whereas this region had a rusty brown cast, suggesting hemorrhage, and there were some fine pigment granules present, no free red blood cells could be found.

It is necessary to dwell for a moment on the cause of the swelling of the palms and soles in acrodynia, because the sections from both Butler's [5] (Michaelson's pathologic examination) and my case disagreed with those of Warthin.[6] Warthin emphasized that there was no edema, including lesions on the trunk, and his illustrations would bear him out. But it should be remembered that his materials were postmortem ones and that a certain amount of edema might be prevented from appearing in section as the effect of fixing reagents and postmortem changes. On the other hand, it might be objected that the edema seen in biopsy material could be referred to the local anesthetic that was injected. But, as a matter of fact, the latter does not occur in practice, and at this juncture the appearance of fibrin in our sections was a welcome sight because it indicated not only an edema but also an inflammatory type of edema. It is also necessary to cover the question of the parts of the body concerned by the edema. Butler's material came from the palm; Warthin's from the abdomen, chest wall and hands in both cases, with an additional section from the sole in one: ours did not come quite from the palm, but from the lower forearm nearby. That is, as far as source is concerned, the biopsy material in Butler's and my case collectively paralleled Warthin's. Finally, clinically, the palms of my patient were even more edematous than the forearm lesions—indeed, I described them as oozing. Certainly it should not be contended that there is no edema in acrodynia, albeit it should be shown in the future that other factors also play a part.

The diagnosis of acrodynia was made in spite of the fact that the patient was an adult and that the face was involved more than is usually so described in the juvenile cases. Other diagnoses were considered and discarded, such as pellagra, arsenical dermatitis, and beriberi with eczematoid changes. The diet was inquired into in detail; the patient's wife satisfied us that it filled all the requirements of a well balanced ration. There was no history of arsenical medication; the water supply was probably beyond reproach, because there were no other cases in the neighborhood, and the urine tests for arsenic were negative. The concomitant upper respiratory infection bordering on a bronchopneumonia quite fitted the symptom complex that is erected for acrodynia.

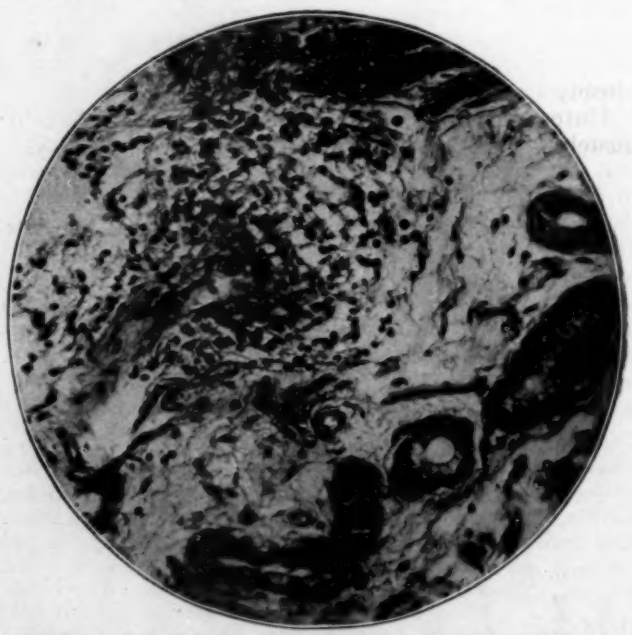

Fig. 5 (case 1).—Skin from forearm: edema and round cell infiltration, including some polymorphonuclears, adjacent to blood vessel.

CASE 2.—Dr. Carroll S. Wright permits me to report a second case in an adult recently observed in the wards of the Philadelphia General Hospital. A white woman, about 35 years of age, was bedridden, had fever, and the tongue was beefy red. Her palms and soles were exquisitely tender, red and swollen, but she did not have the eczematoid changes of the face which the preceding patient exhibited. She recovered in six weeks on simple dietary and symptomatic treatment.

5. Butler, John: Erythredema, Pink Disease, So-Called Acrodynia in Infants and Young Children, Arch. Dermat. & Syph. **11**: 166 (Feb.) 1925.

6. Warthin, A. S.: So-Called Acrodynia or Erythredema (Swift's Disease), Arch. Path. & Lab. Med. **1**: 64 (Jan.) 1926.

ETIOLOGY AND PATHOLOGY

As to etiology, this disease usually follows, or is coincident with, an acute chronic upper respiratory infection; i. e., it may be of acute infectious nature. Other theories have been broached; food deficiency may be dismissed, because the majority of patients have been on proper diet, although the disease has simulated pellagra at times, and a correct diet does not necessarily guarantee perfect assimilation. No relation has been found to the French epidemic of "acrodynia" in 1828, which is thought to have been caused by drinking water containing arsenic. As to the pathology, Warthin[8] concluded from the postmortem examination of two typical juvenile cases that the essential pathologic changes were: extreme edema and slight meningeal irritation of the nervous system; chronic erythema of the skin, with hyperkeratosis; hypertrophy of the epidermis and sweat glands, with slight pigmentation of the rete; occurrence in children of the hypoplastic lymphatic constitution, with associated or terminal respiratory infections and gastro-intestinal catarrh and inanition.

CONCLUSIONS

Acrodynia may exist in adults as well as in children.
One patient tested did not have a photosensitive skin.

THE CORRECTION OF DEFORMITY IN QUIESCENT DISEASE OF THE HIP*

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The various methods of treatment for prevention of deformity in disease of the hip have been described in all modern textbooks of surgery; therefore, any further discussion of them here would be a repetition of facts already known.

Unfortunately, these methods are not always adequately applied, with the result that in any large surgical clinic a considerable number of patients with quiescent or healed disease of this joint are seen in whom the chief cause of disability is deformity. During the last two years a group of such cases have been admitted to the Shriners' Hospital for Crippled Children, St. Louis, and it is with the special methods of treatment for correction of deformity employed in this group that we are concerned in this article.

It is important to emphasize that the patients comprising this group were children in whom the clinical examination indicated quiescent disease. From the histories, clinical data and roentgen-ray examinations we judged the cause of the destructive process to be either tuberculosis or pyogenic infection. In the tuberculous cases marked deformity was present without ankylosis, while in the cases in which pyogenic organisms had produced the joint destruction there was gross deformity with bony ankylosis.

In all cases the destruction of the joint was so extensive that little hope could be entertained of restoring a useful range of motion. The fundamental principles for treatment, therefore, were correction of deformity and fixation of the limb in a good functional position for weight bearing.

The practical application of these fundamental principles as used in the two types of cases referred to above, namely, those without and those with ankylosis, can best be described as follows: (1) the correction of deformity of the hip without ankylosis; (2) the correction of deformity of the hip with ankylosis.

THE CORRECTION OF DEFORMITY OF THE HIP WITHOUT ANKYLOSIS

The clinical picture presented by cases included in the first group was that which is commonly seen as a result of a tuberculous disease that had occurred early in childhood. The deformities were all of the same type—flexion, adduction and internal rotation. The roentgenograms showed gross destruction of the joint, especially of the head and neck of the femur with upward displacement of the great trochanter. Shortening was present in every case, the average amount being from 2½ to 3 inches. Contracture of the soft parts fixing the limb in its deformed position was a striking feature, and this condition was particularly well marked in the adductor and flexor muscles. The disease process, therefore, had produced a very extensive destruction of the joint surfaces, with pathologic dislocation and deformity fixed by scar tissue surrounding the old joint and a marked contracture of the soft parts.

The indications for treatment, therefore, were threefold; namely, to correct deformity, to secure stability, and to reduce the shortening. To correct deformity the contracted soft parts must be divided extensively, while to secure stability and reduce shortening the great trochanter must be brought down to the level of the acetabulum and an arthrodesis performed. The question which arose was, Could all these indications be met by a single operation? We judged that they could not, for our experience with correction of deformities of this type had taught us that even after the soft parts had been divided it was seldom possible to bring the trochanter down to the level of the acetabulum. Furthermore, it was realized that a single stage operation is necessarily one of considerable magnitude and very commonly produces a high degree of shock. In view of the fact that the correction of deformity in this variety of case is usually elective in character, we were not justified in the employment of a method that would offer little hope of success and, at the same time, would involve a very considerable risk to life.

The treatment devised, therefore, was to correct deformity and reduce the shortening by division of contracted soft parts and the application of traction as a preliminary to securing stability by arthrodesis. The description of this method can best be set forth under the headings: (1) section of the adductors and application of skeletal traction; (2) application of traction on a Thomas splint with overhead suspension; (3) arthrodesis of the hip.

1. *Section of the Adductors and Application of Skeletal Traction.*—The skin of the groin, thigh and lower abdomen is given a twenty-four hour preparation. At operation, an oblique incision from 2 to 3 inches in length is made over the upper and inner surfaces of the thigh. The deep fascia, tendinous portion of the adductor longus, adductor brevis, gracilis and part of the adductor magnus are divided transversely. No attempt is made to incise the muscles completely, as the tendinous portion plays the main rôle in maintaining the deformity. Any shortening of the muscle substance itself can usually be overcome by

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* From the Shriners' Hospital for Crippled Children.

* Read before the Section on Orthopedic Surgery at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

gentle stretching or by traction following operation. If the flexor muscles are shortened, they are released from their origin at the anterior superior and inferior spines of the ilium after the method of Soutter. The wounds are closed in layers and dressings are applied.

In cases in which there is moderate contracture of the soft parts, adhesive traction is usually satisfactory; but in those patients with very marked contracture and upward displacement of the trochanter, skeletal traction is essential. In children, this form of traction is best secured by a steel pin inserted through the lower end of the shaft of the femur well above the epiphyseal line. We use a pin constructed from drill rod, one end of which has a drill point while the opposite end is squared off to fit in the drill chuck. This drill pin can be turned directly through the cortical bone and left in place for traction. If the ordinary Steinman pin is employed, a preliminary drilling of the cortex is necessary which causes additional trauma to the tissues.

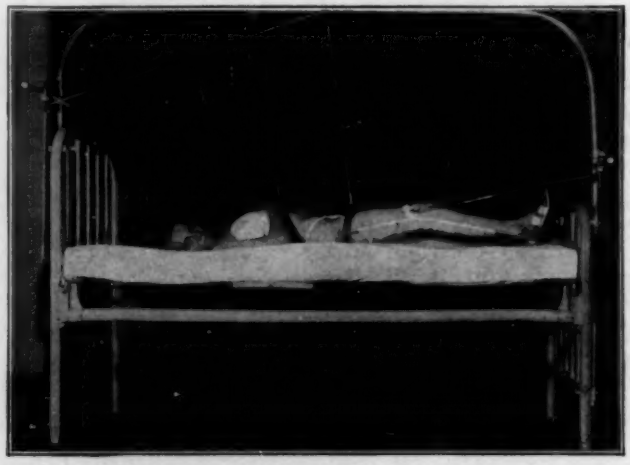

Fig. 1.—Method of securing skeletal traction with a steel pin passed through the lower end of the shaft of the femur. Countertraction is obtained by suspending the Thomas ring against the ischium.

The drill pin is inserted through a stab incision, which is made on the inner aspect of the thigh about 2 inches above the adductor tubercle. It is turned through the bone and soft parts until its point bulges under the skin on the lateral aspect of the thigh. Here a counterincision is made and the pin pushed through this opening until its extremities are equidistant from the internal and external surfaces of the thigh. A Steinman stirrup is attached to the pin ends, and after the dressings and Thomas splints are applied the patient is transferred to the ward.

2. *The Application of Traction on a Thomas Splint with Overhead Suspension.*—Traction is obtained by weight and pulley attached to the Steinman stirrup, with the limb supported on a fixed Thomas splint. Countertraction is secured by suspending the leather ring against the tuberosity of the ischium (fig. 1).

The initial weight used is about 15 pounds, but this is rapidly increased so that at the end of a week we have up to 40 or 50 pounds of traction. When measurements and roentgenograms indicate that the great trochanter has traveled down to the level of the acetabulum, the leg is gradually extended and abducted in order to stretch thoroughly the adductor muscles.

To fix the pelvis during gradual abduction of the leg, it is well to apply adhesive traction with weight and pulley to the opposite leg. During the correction of flexion deformity it is usually necessary to prevent flexion of the lumbar spine—false correction—by applying traction to the opposite leg on a Thomas splint with the hip flexed and the knee extended (fig. 2). These methods of fixing the pelvis are more fully described in later paragraphs.

When the traction has caused complete stretching of the soft parts and brought the trochanter down to the level of the acetabulum, the drill pin is removed and the position of the leg maintained by adhesive traction. This procedure allows the wounds to heal before arthrodesis of the hip is attempted. In our cases the wounds have healed in about ten days.

3. *Arthrodesis of the Hip.*—A two day preparation of the skin is carried out as a preliminary to operation. The acetabulum and upper femur are exposed through the Smith-Peterson incision. The method of performing arthrodesis has varied with conditions present. When the head is entirely missing and the neck is represented by a stump of bone, we have cut out a notch between the upper surface of this stump and the inner surface of the great trochanter. This denuded cancellous surface can be accurately fitted against the upper part of the acetabulum and the adjacent wing of the ilium. This area of contact is usually reinforced by bone grafts, which are of the cancellous type taken from the crest of the ilium or the periosteal form cut from the internal surface of the tibia. The wound is closed with catgut and silk, and a long plaster-of-paris spica extending from the toes to the chest is applied.

The postoperative care consists of fixation in a long spica in recumbency for at least four or five months. If at the end of this period the clinical examination and roentgenograms indicate that bony union is taking place, the patient is allowed to be up in a short plaster-of-paris spica with partial weight bearing. This plaster is changed at intervals for the purpose of further roentgen-ray examination. When complete consolidation between the trochanter and the acetabulum has occurred, full weight bearing is permitted. The period required is at least six months.

Fig. 2.—Method of fixing the pelvis in the correction of flexion deformity of the left hip. Traction is applied to the left leg while the right is held on a Thomas splint with the hip flexed and the knee extended. In this position the taut hamstrings prevent hyperextension of the spine.

The point I wish to emphasize concerning this method of treatment is that the difficulty of bringing the trochanter down to the level of the acetabulum encountered in a single stage operation is largely eliminated. The reduction of the trochanter is readily secured, and apposition of denuded cancellous surfaces

is easily maintained. The effectiveness of skeletal traction in stretching contracted soft parts as a preliminary to arthrodesis is thus admirably demonstrated.

RESULTS

Three patients have been treated by this method. Their ages varied from 11 to 14 years. All had very marked deformity of flexion, adduction and internal rotation. Preliminary division of the contracted structures and the application of heavy traction were successful in overcoming deformity and bringing the trochanter to the level of the acetabulum (figs. 5, 6 and 7). The arthrodesis was therefore carried out with much less difficulty and with a minimum of shock to the patient.

Fig. 3 (case 1).—On admission, showing old destructive process in the hip with upward displacement of the great trochanter and adduction deformity.

The first two patients are now walking with short plaster-of-paris spicas with full weight bearing. In the third case the trochanter was forced well within the acetabulum by extreme abduction of the leg, the object being to obtain ankylosis in this position. Our plan is to correct the extreme abduction later by a transverse osteotomy and gradual bending of the callus. This patient is still wearing a long plaster-of-paris spica, but the roentgenograms and clinical findings indicate a beginning union between the trochanter and the acetabulum (fig. 7). Up to the present time the evidence points to arthrodesis of the joint in all cases, but sufficient time has not elapsed to give end-results.

I must emphasize here, however, that my object in this article is to describe a method for correction of deformity which will not be attended by the serious technical difficulties and the shock incident to an operation done at a single sitting. By correcting the deformity as a preliminary to arthrodesis, we can readily appose the trochanter to the acetabulum and therefore create more favorable conditions for bony union.

REPORT OF CASES

CASE 1.—*History.*—T. W., a boy, aged 14, admitted to the Shriners' Hospital for Crippled Children, July 16, 1925, had an injury at 18 months of age which was followed by limping in the left hip. His parents thought that he had considerable pain at that time, especially when he tried to walk, and this pain was referred to the region of the knee. Some months after the onset, an abscess formed and was opened. The joint was immobolized for about eighteen months. No other treatment was instituted, and the joint finally healed in its position of deformity. At the time of admission the patient walked with a marked deformity of the hip, touching the ground only with the toes of the left foot. He complained chiefly of shortening and the deformity.

Physical Examination.—There was a flexion and adduction deformity of the left hip, with the trochanter elevated above Nelaton's line. The deformity was fixed by a very marked shortening of the adductor muscles. As far as could be measured with the deformity present, there was between 3 and 4 inches of shortening. In standing, the pelvis was elevated on the affected side as a result of the adduction deformity. The Pirquet test was positive, and the Wassermann reaction on the blood was negative.

The roentgenograms taken September 8 showed a very marked destruction of the acetabulum and the upper extremity of the femur, with upward displacement of the great trochanter. Our diagnosis was old tuberculosis of the hip joint with pathologic dislocation (fig. 3).

Operation and Result.—August 6, an incision was made over the internal aspect of the upper thigh. The adductor longus, brevis, gracilis and part of the adductor magnus were sectioned. The wound was closed with catgut and silk. A Steinman pin was inserted through the lower end of the femur in the usual manner. A Thomas splint was applied and the patient transferred to the ward.

September 19, the convalescence from operation had been uneventful and the deformity had been almost completely corrected by using traction weight up to 40 pounds. The roentgenograms showed the trochanter on a level with the upper border of the acetabulum.

September 21, through a Smith-Peterson incision, the great trochanter and the acetabulum were isolated and dissected free from the mass of scar tissue that surrounded them. The upper and internal surfaces of the trochanter and the superior surface of the acetabulum and adjacent wing of the ilium were denuded until fresh cancellous surfaces of bone were exposed. These cancellous surfaces were then apposed and reinforced by periosteal grafts taken from the tibia. The wound was then closed with catgut and silk, and a plaster-of-paris spica was applied.

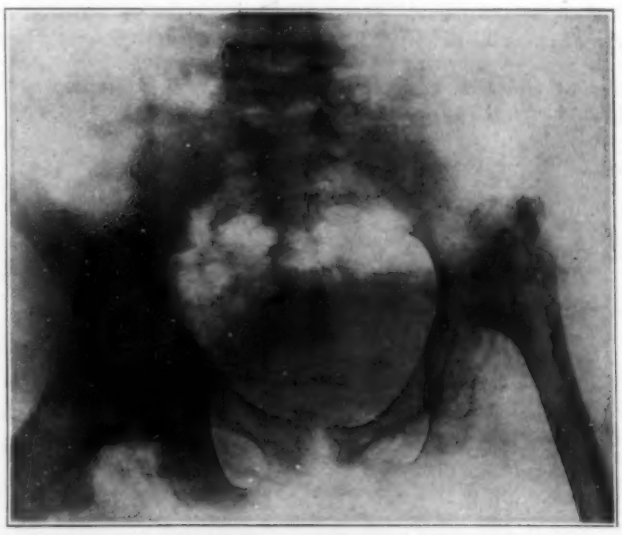

Fig. 4 (case 1).—Six months after operation: bony ankylosis of the joint in a good functional position for weight bearing.

The convalescence was uneventful, but when the stitches were removed an area at the lower end of the wound had broken down and was discharging some thin purulent material. The hip was immobolized in a long plaster-of-paris spica for about five months and was then removed and a short plaster-of-paris spica applied. Five months after the operation the patient was up on crutches bearing some weight on the affected limb, the hip held fixed by a plaster-of-paris spica. The small sinus continued to discharge, and we regarded this as an

operative infection because we could find no evidence of active disease at the time of operation.

The roentgenograms, March 15, 1926, showed good contact of the trochanter and the acetabulum, and apparently beginning bony union. On clinical examination we failed to detect any motion (fig. 4). The patient remains in the hospital and is

Fig. 5 (case 3).—Almost complete destruction of the head and neck of the femur, with adduction deformity.

bearing almost full weight on the affected extremity without pain. There is less discharge from the sinus at the lower end of the wound. It is apparently healing, though very slowly.

CASE 2.—*History.*—W. C., a boy, aged 12, was admitted to the hospital, Sept. 25, 1925. The onset was at 4 years of age. His first symptom was pain in the lower extremity. At the end of one month his left hip began to swell, and he was taken to the hospital, where a plaster-of-paris spica was applied.

Fig. 6 (case 3).—Three and one-half weeks after the application of skeletal traction: The great trochanter has been pulled down to the level of the acetabulum.

This was worn for several months but finally discarded. Since that time he had had no treatment, and his complaint at the time of admission was deformity of the hip joint and shortening.

Physical Examination.—There was a shortening of 2 inches with the hip fixed in a permanent deformity of 70 degrees flexion, 15 degrees adduction and slight internal rotation. There was about 20 degrees motion in flexion and extension. The trochanter was elevated above Nelaton's line.

The roentgenograms showed an old destructive lesion of the left hip joint, which had completely destroyed the head of the femur and nearly all the neck. The trochanter was displaced upward and lay in contact with the wing of the ilium. Our diagnosis was old tuberculosis of the hip joint with pathologic dislocation. The Pirquet test was positive, and the Wassermann reaction on the blood was negative.

Operations and Result.—October 19, an oblique incision was made over the upper anterior aspect of the thigh, exposing the gracilis, adductor longus and adductor brevis muscles. The tendinous portions of these muscles were divided, and the muscular bellies were stretched by gentle abduction.

Through a second incision the origins of the tensor fasciae femoris, sartorious and rectus were exposed and reflected subperiosteally from the anterior superior and inferior spines of the ilium. As the upward displacement of the trochanter was not very pronounced, a Steinman pin was not used and traction was applied with adhesive tape on a Thomas splint.

November 3, the convalescence had been uneventful and the wound healed by first intention. Weight and pulley traction was applied and continued for several weeks.

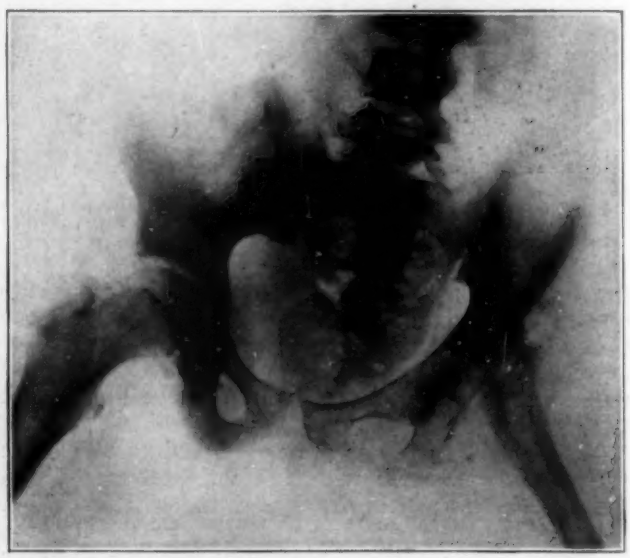

Fig. 7. (case 3).—Three months after arthrodesis: The trochanter within the acetabulum and beginning ankylosis; abduction will probably be reduced later by osteotomy and gradual bending of the callus uniting the fragments.

November 19, the roentgenograms and measurements showed the deformity to be almost corrected, and so it was decided to do an arthrodesis of the hip.

November 23, the hip joint was approached through the Kocher incision by division of the lower half of the gluteus maximus along the course of its fibers. The insertions of the gluteus medius and external rotators were freed from the trochanter and stump of the neck and reflected upward. The acetabulum was then cleared of scar tissue, and its upper surface and adjacent ilium were denuded. A notch was then cut on the upper surface of the stump of the neck and inner surface of the great trochanter, and this freshened area was apposed to the denuded area of the upper surface of the acetabulum and wing of the ilium. The bones were fixed in place by inserting a long nail, which was passed through a puncture wound in the skin through the great trochanter into the wing of the ilium. The wound was then closed in layers and a plaster-of-paris spica applied with the hip held in about 25 degrees of flexion and the same amount of abduction.

The convalescence from operation was uneventful. The stitches were removed at the end of fourteen days and the wound was healed. Feb. 19, 1926, nearly three months after operation, the patient was discharged home wearing a long

plaster-of-paris spica. He returned to the outpatient department, March 3. The roentgenograms at this time showed beginning union between the acetabulum and the great trochanter. The clinical examination failed to detect motion. He is to continue to wear a long plaster-of-paris spica another month and then is to return for further roentgen-ray examination and probably the application of a short plaster-of-paris spica with weight bearing.

CASE 3.—*History.*—M. W., a girl, aged 11, admitted to the hospital, Oct. 19, 1925, had apparently been normal until 3 years of age, when she fell from the second story window, injuring the left hip. About one week later she began to complain of pain in this region and was sent to a hospital, where the hip was stretched and a plaster-of-paris cast was applied. This was worn for several months and was followed by the application of a brace. This was finally discarded when the symptoms abated, and the patient developed deformity of the affected joint. At the time of admission she complained of adduction deformity of the hip which caused a very pronounced limp.

Physical Examination.—There was about 30 degrees of flexion and 20 degrees adduction and slight internal rotation of the left hip. The shortening was between 2 and 3 inches, as far as could be determined by measurements in the presence of the marked deformity. There was no sensitiveness, no tenderness and no other signs indicating an active process. There were a few degrees of motion remaining in flexion and extension.

Roentgenograms showed an old destructive lesion of the left hip, with almost complete disappearance of the head and neck of the femur. There was an upward dislocation of the great trochanter. Our diagnosis was old tuberculosis of the hip joint with pathologic dislocation (fig. 5). The Pirquet test was positive, and the Wassermann reaction on the blood was negative.

Operations and Result.—November 16, through an incision on the anterior internal aspect of the thigh, the tendinous portions of the adductor longus, gracilis and adductor brevis muscles were divided. The muscle substance was stretched by gradual abduction of the leg. A Steinman pin was inserted through the lower end of the shaft of the femur in the usual manner. Dressings and a Thomas splint were applied, and the patient was transferred to the ward.

November 26, the wound had healed by first intention, convalescence was uneventful, and traction up to 20 pounds was applied.

December 10, the weight had been increased up to 50 pounds and the hip had been gradually extended and abducted in the manner described above. A position of wide abduction and complete extension was secured.

The roentgenograms, December 9, showed complete correction of the deformity, with the tip of the trochanter brought down to the level of the upper border of the acetabulum (fig. 6).

December 10, a Smith-Peterson incision was employed for exposure of the joint. The scar tissue was removed from the region of the great trochanter and the acetabulum. The upper surfaces of the great trochanter and acetabulum were denuded so as to expose fresh cancellous bone. By wide abduction of the limb the trochanter was forced well into the acetabulum. The wound was then closed with catgut and silk, and a plaster-of-paris spica was applied, holding the limb in extreme abduction.

The wound healed by first intention. The patient remained in the hospital for two months wearing a long plaster-of-paris spica. She was sent home to remain in recumbency, and returned to the outpatient department, March 17, 1926, three months after operation. The plaster was bivalved and the clinical examination and roentgenograms seemed to indicate that bony ankylosis would probably take place (fig. 7). A new plaster-of-paris spica was applied, and the patient is to return in two months.

The manner of correcting the marked abduction and bringing the leg to a useful position of weight bearing will depend on whether we gain a solid ankylosis of the joint. In case we do, we plan on bringing the extremity down to a useful position of weight bearing by an osteotomy of the upper end of the femur and gradual bending of the callus. In case solid ankylosis does not occur, it is highly probable that once the fixation is removed the limb will gradually adduct until a useful position for weight bearing is secured.

CORRECTION OF DEFORMITY OF THE HIP WITH BONY ANKYLOSIS

In the group in which the deformity was corrected with bony ankylosis, the joints were ankylosed in flexion, abduction and external rotation. The history, clinical examination and roentgenograms gave sufficient evidence to warrant a diagnosis of pyogenic infection as the cause of the joint destruction.

The usual method of treatment employed in such cases is correction of the deformity by subtrochanteric osteotomy of the femur. The type of osteotomy may be transverse, curved or cuneiform, the choice depending on the severity of the deformity present. The great difficulty experienced in all these types, however, is that in the presence of very severe deformity there exists a great danger of displacement and overriding of the fragments. This displacement is brought about by attempting immediate correction in the presence of the adaptive shortening of the soft parts. It should be emphasized also that the curved and cuneiform types of osteotomy are difficult to perform in the presence of extreme abduction, flexion and external rotation.

To avoid these complications, a new method of treatment was devised which combines a transverse subtrochanteric osteotomy with gradual correction of the deformity to allow the fragments to become embedded in soft callus. The gradual bending at the site of deformity can then be secured without risk of displacing the fragments because they are fixed by the callus which surrounds them.

In a previous article [1] this method was fully described, and here I shall discuss only its salient features under the headings: (1) subtrochanteric osteotomy of the femur; (2) fixation of the leg until the fragments are embedded in callus; (3) gradual correction of the deformity; (4) protective weight bearing.

1. *Subtrochanteric Osteotomy of the Femur.*—If the deformity is one of abduction and external rotation, an anterior incision is made beginning at the anterior superior spine of the ilium and extending downward for 4 to 5 inches. After the deep fascia has been incised, the tensor fasciae femoris and the sartorius are separated. The femur is exposed between the rectus and the origin of the vastus lateralis. After incision and separation of the periosteum, the bone is divided transversely just below the level of the lesser trochanter. The wound is closed in layers. A Thomas splint with traction is applied, and the limb is fixed in the position of deformity by suspension to an overhead bed frame. In flexion and adduction deformity an incision is made on the posterolateral aspect of the thigh, with partial division of the fibrous expansion of the gluteus maximus. A transverse subtrochanteric osteotomy is then performed in the usual manner.

2. *Fixation of the Leg Until the Fragments Are Embedded in Callus.*—The patient is placed on a Bradford frame, the upper end of which is suspended to the head of the bed by heavy leather straps. This

1. Abbott, L. C., and Jostes, F. A.: A Simple Method for Correction of Deformity in Bony Ankylosis of the Hip Joint, Surg. Gynec. Obst. 42: 274-282 (Feb.) 1926.

arrangement permits use of the bed pan without changing the position of the patient. The lower end of the Thomas splint is fixed to the tubal arm of the overhead bed frame. We have made use of the modified Morrison bed frame. It is constructed of gas pipe with upper and lower uprights that clamp on the ends of the bed. They are joined by a horizontal bar. Adjustable sockets into which can be fitted tubal arms of various lengths allow fixation of the limb in any position desired (fig. 2).

At the end of four or five weeks, the roentgenograms will usually show abundant callus surrounding the bone ends, and we are now ready to begin correction of the deformity.

3. *Gradual Correction of the Deformity.*—The correction of deformity is secured by gradual change in the position of the leg. Each day the lower end of the Thomas splint is brought a little nearer to the midline. With each successive change there is a bend in the callus surrounding the fragments. This bend is not acute but gradual, and the roentgenograms of the completed cases show a very smooth and rounded curve at the site of osteotomy. The time required for correction of deformity in the average case is about four weeks. When this position is obtained, the limb is fixed until clinical examination and roentgenograms indicate consolidation of the callus. The apparatus is then removed and the patient allowed to move about in bed.

The control of the pelvis during the period of correction is absolutely essential. It can be secured by the application of traction to the opposite leg. In correcting the deformity of abduction, traction is applied with the opposite leg held in line with the trunk; in adduction, with the opposite leg held in full abduction. Fixation of the pelvis and lumbar spine during correction of flexion deformity is obtained by holding the sound limb on a Thomas splint with right angle flexion of the hip and complete extension of the knee. In this position the hamstrings are held taut, and arching of the lumbar spine—false correction—is entirely prevented (fig. 2). This method will be found extremely useful in correction of flexion deformities in infantile paralysis, and I have found it far superior to the fixation of the pelvis secured by either a plaster jacket or a Bradford frame.

4. *Protective Weight Bearing.*—As the tests for consolidation of callus are not absolute, I have found it a good practice to use a protective weight bearing appliance when the patient becomes ambulatory. For this purpose the Thomas walking caliper splint is both simple and practical. It is worn for several months, and finally discarded when careful observation shows no tendency to increase in the deformity at the site of osteotomy.

The advantage of this method of correcting deformities of the hip with bony ankylosis is that it renders unnecessary the use of complicated osteotomies. Through its use the contracted soft parts are gradually stretched so that there is little risk of displacement of the fragments. In the ordinary osteotomy the limb is fixed postoperatively in a plaster-of-paris spica, and it is very difficult to determine whether the desired position of correction has been obtained without resorting to frequent changes of plaster. With this method the limb is free for inspection throughout the treatment and the necessary changes can readily be made.

RESULTS

Three cases with deformity of abduction, flexion and external rotation have been treated by this method. In all, correction of deformity was obtained and great functional improvement occurred.

The results in these patients were excellent, and I feel justified in advocating the method as a substitute for ordinary osteotomy. It will be found useful in correction of complicated deformities of the hip joint with bony ankylosis.

REPORT OF CASES

CASE 4.—*History.*—W. H., a boy, aged 13, admitted to the hospital, May 23, 1924, jumped from a rafter, in September, 1922, and that evening complained of pain in the left hip. Three days later he was confined to bed with high fever, and the left hip began to swell. He was taken to a hospital, where a diagnosis of tuberculosis of the left hip was made and weight and pulley traction was applied. During the next six weeks the pain continued and the swelling increased until the left hip was twice the size of the normal one. From this time on the swelling gradually decreased. The traction was removed at the end of the tenth week, and the hip gradually drew upward. In March, 1923, he was discharged from the hospital. The hip remained swollen and deformed. At the time of admission the patient complained of stiffness and deformity of the hip. There was no pain, but the gait was very awkward because of the deformity.

Physical Examination.—The boy was well nourished. The left hip was held in a position of extreme abduction, flexion and external rotation. There was a marked thickening of the soft tissues in the groin, anterior surface of the upper thigh and over the crest of the ilium. The entire left thigh was much larger than the right. There was no motion of the hip in any direction. In walking, the pelvis was tilted downward on the affected side, with a compensatory curvature of the lumbar spine.

Roentgen-ray examination showed a deformity of 90 degrees abduction, and there was solid bony ankylosis. Our diagnosis was old osteomyelitis of the head and neck of the femur with involvement of the joint; bony ankylosis.

Operation and Result.—May 29, 1924, an incision was made on the anterior aspect of the thigh in the manner described above. Considerable difficulty was experienced in exposing the femur because of the mass of scar tissue encountered. The bleeding from the scar tissue was profuse. A transverse osteotomy of the femur was done, and because of the possibility of lighting up the old infection the wound was packed open with gauze saturated with acriflavine. Counterdrainage was established by a stab wound in the buttock. A Thomas splint was applied, and immobilization secured by pillows and sand bags.

June 5, the postoperative convalescence was uneventful. Dressing of the wound showed it to be clean. Immobilization of the leg was continued.

June 17, the roentgen-ray examination showed abundant callus formation with no displacement of the fragments. During the next three weeks the deformity was corrected by gradually adducting and internally rotating the leg. June 28, the roentgenograms showed a bending of the callus and no displacement of the fragments. Immobilization continued until August 23, when the roentgenograms indicated consolidation of the callus. The wound was completely healed. A Thomas walking caliper splint was applied and worn until the first week in October. It was then gradually discarded, and the patient was discharged from the hospital, October 29.

Jan. 19, 1925, the patient returned to the hospital for observation. Examination showed about 20 degrees abduction and 20 degrees flexion. There was no pain, and he walked with only a slight limp. The functional result was excellent.

CASE 5.—*History.*—A. P., a boy, aged 7, admitted to the hospital, Aug. 19, 1924, fell down a flight of steps in February, 1924, injuring the right hip. For the next two weeks there was pain in the hip, and fever. An abscess formed and was lanced. Drainage continued for about three weeks, when the wounds were healed. Weight and pulley traction was used

during the acute stage. When this was removed, the leg drew upward until there was considerable deformity present. At the time of admission he complained of deformity and stiffness of the right hip. In walking, the hip was held in wide abduction and with only the toes touching the ground.

Physical Examination.—The boy was fairly well developed. He held the right hip in a position of extreme abduction, flexion and external rotation. In walking, only the toes on the right side touched the ground and the gait was very awkward. No motion could be detected in any direction. There was no pain or sensitiveness of the joint.

Roentgen-ray examination showed the thigh abducted 90 degrees. There was destruction of the joint cartilage. Our diagnosis was suppurative arthritis of the right hip joint; incomplete ankylosis.

Operation and Result.—August 25, a subtrochanteric osteotomy was done through the usual anterior incision. The leg was held in the position of deformity by traction on a Thomas splint. This was maintained for fifteen days.

September 8, correction of the deformity was begun by gradual adduction of the leg. September 23, the roentgenograms showed correction of the deformity with the fragments held in a mass of callus. The leg was then immobilized for six weeks.

October 30, the roentgenograms showed complete correction of the deformity with union of the fragments. It is interesting to note here that the deformity was corrected by both movement of the hip joint and at the site of osteotomy. It seems likely that correction of the deformity could have been secured without osteotomy. Knowing that there was not complete ankylosis of the joint, we applied a short plaster-of-paris spica, and the patient was allowed to walk. Jan. 1, 1925, the patient was discharged from the hospital wearing the plaster spica.

April 1, the spica was removed and the examination showed the hip held in slight abduction and slight flexion. He walked with only a slight limp. Roentgen-ray examination showed a correction of the deformity with solid union of the fragments. A new spica was applied and bivalved.

July 10, a letter from the family physician stated that the patient had fallen and sustained a supracondylar fracture of the left femur. This healed in good alinement and with full length.

CASE 6.—*History.*—J. W., a boy, aged 16, admitted to the hospital, Oct. 14, 1924, at the age of 6 years had pain in the left hip, which necessitated treatment in a hospital. Traction was applied, and this was followed by fixation in a plaster-of-paris spica. No further history could be obtained, as the patient lived in a Masonic home and his parents were dead. At the time of admission he complained of stiffness and deformity of the hip.

Physical Examination.—He was well developed and nourished. In standing there was a marked lumbar lordosis with 70 degrees flexion of the hip and about 35 degrees abduction. There was no motion of the joint in any direction, and no pain was elicited on a forcible attempt to move the joint.

Roentgen-ray examination showed fusion of the head of the femur and acetabulum.

Operation and Result.—October 20, through an anterior incision, a subtrochanteric osteotomy was done in the usual manner. A Thomas splint and traction were applied, holding the leg in the position of deformity. The lower end of the splint was fixed to a long tubal arm of an overhead bed frame.

October 30, the convalescence from operation was uneventful. The stitches were removed and the wound showed healing by first intention.

Roentgen-ray examination, November 28, showed sufficient callus to allow correction of the deformity. As there was marked flexion, the lumbar spine was controlled by holding the opposite leg on a Thomas splint with the hip flexed and the knee extended. Complete correction of the deformity was secured in five weeks. Immobilization was continued, and massage and exercises of the knee were begun.

Feb. 2, 1925, a plaster-of-paris spica was applied and the patient allowed to walk.

February 12, the patient was discharged wearing a plaster-of-paris spica.

April 4, the patient was seen, having returned at intervals of one month. On this visit the roentgenograms showed complete correction of the deformity and solid union. The hip was held in excellent position, with only slight flexion and slight abduction. The patient walked with scarcely any limp, and the functional result was excellent.

SUMMARY

1. Diseases of the hip joint that have produced extensive destruction of the joint surfaces are not uncommonly associated with marked deformity. In many of the healed or quiescent cases, deformity is the chief cause of disability.

2. The fundamental principle of treatment, therefore, is correction of the deformity and fixation of the limb in a good functional position for weight bearing.

3. In this group of cases the history and clinical examination indicated that the cause of the joint destruction was either tuberculosis or pyogenic infection.

4. In the tuberculous cases there was almost complete disappearance of the head and neck of the femur, with upward displacement of the great trochanter and a few degrees of motion. The deformity of flexion, adduction and internal rotation was fixed by scar tissue and contracture of the soft parts.

5. The indication for treatment in this type of case is correction of the deformity and fixation of the great trochanter within the acetabulum. If attempts are made to accomplish this by a single operation, failure is almost certain to occur because of the great difficulty of overcoming the contracture of the soft parts and bringing the trochanter down to the level of the acetabulum. Moreover, a high degree of shock is commonly associated with such a procedure.

6. In this group of cases the deformity was corrected preliminary to arthrodesis. The method employed was carried out in three stages:

1. Division of the contracted soft parts and insertion of a Steinman pin through the lower shaft of the femur.
2. Application of heavy traction over a period of several weeks.
3. Arthrodesis.

7. In the cases in which destruction of the joint was due to pyogenic infection, there was bony ankylosis with deformity of flexion, abduction and external rotation.

8. The usual method of treatment employed in such cases is immediate correction of the deformity by some type of subtrochanteric osteotomy. The difficulty, however, is that when immediate correction is attempted in the presence of severe deformity and marked contracture of the soft parts, displacement and overriding of the fragments frequently occurs.

9. In this group of cases a simple transverse subtrochanteric osteotomy was done and the limb fixed in its position of deformity until the fragments were surrounded by soft callus. The deformity was then corrected in stages by a gradual bending of the callus.

10. In all the cases treated by these special methods, the deformities were completely corrected. Where sufficient length of time has elapsed to permit end-results, the hips are stable and held in good position for weight bearing. In the more recent cases there is every indication that ankylosis in a good functional position will be secured.

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ABSTRACT OF DISCUSSION

Dr. H. W. Orr, Lincoln, Neb.: It affords me the greatest possible satisfaction to see the manner in which Dr. Abbott is developing and extending into a wider territory the principles of fixed traction and immobilization which a number of us employed during our experience in Great Britain and France. It has been my experience in doing things of this sort that it is possible, with as efficient immobilization as he employs, to do away entirely with what one might call elastic traction. One may incorporate the Steinman pin or the ice tongs in such cases immediately into the cast and by putting on a double spicula obtain even more immediate correction of the deformity. By doing that in two or three stages, and by making this traction skeletal traction with good immobilization in the plaster cast, it is possible to do exactly what the author has shown us. This is easily possible even in the hands of those of us who have had different or less experience in just this kind of case.

Dr. E. C. Bull, San Francisco: I have been greatly interested in Dr. Abbott's original method of maintaining the engagement of the ends of the bones where he has performed osteotomy. In adults that becomes even more of a problem than in younger children, who have such a great ability to throw out bone callus. I think of one particular case, in a woman, aged 22, who at the age of 6 lost the head and neck of the femur by some pyogenic process. At the time I saw her she had a marked flexion adduction deformity but was walking with a freely movable hip, the lesser trochanter articulating at the acetabulum. Obviously, any attempt to pull the leg down would have resulted in limitation of movement, but it was quite imperative to bring the limb around into a position where it could be useful. The osteotomy in this case necessarily was subtrochanteric at a point where the bone was relatively narrow, and just as I was going in it occurred to me that a slight variation of the cuneiform osteotomy operation might safeguard the result. Instead of lifting up the periosteum in approaching the bone, I chiseled off three or four strips of bone, an inch and a half or so in length, parallel to the long axis of the bone, and lifted those up, attached to the periosteum; in other words, I left live grafts which would overlap the osteotomy. When the abduction was overcome, these grafts lay across and overlapped the main fragments, and served two purposes: to help fix the fragments in position while the callus was solidifying, and to permit earlier weight bearing without danger of gradual angulation, such as follows too early weight bearing with strain on incomplete callus.

Dr. J. P. Lord, Omaha: I wish to lend endorsement to this principle and I think that this is a distinct contribution because it will simplify this work in the hands of some of those who might not care to do such extensive, immediate osteotomies. I have used this principle for a number of years in the treatment of rachitic and other extreme deformities. I have also used it extensively in fractures, particularly those delayed fractures that come to us with angulation, in which it was possible to get the bones end to end by turning the limb perhaps at right angles, then letting the parts come together gradually in alinement, and with restored length, so that, as I say, I think this is a distinct contribution because it simplifies what may become in the hands of some a rather complicated condition.

Dr. Leroy C. Abbott, St. Louis: This method of osteotomy in cases of ankylosis of the hip joint can be employed extensively. When we started out we employed the method for very severe flexion, abduction and external rotation deformities of the hip. Since that time we have employed it in other types of deformities and I must confess that at least for me it has been much simpler than trying some more complicated type of osteotomy and then having the ends slip by.

Radiology and Tapeworms.—Infection by *Taenia solium* has become extremely rare in this country, and the recognition of the aberrant cysticercus cellulose stage of this intestinal parasite in man by radiologic means is of interest.—Roth, E. J. H.: *Brit. M. J.*, Sept. 11, 1926.

SOME BROMINIZED OILS FOR RADIOGRAPHIC USE

PRELIMINARY REPORT *

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There is no doubt that the various radiopaque oils (lipiodol, iodipin, etc.) which have recently been introduced have proved a valuable diagnostic aid. Already there is an extensive literature on their employment in the study of the spinal canal, the ventricles, the lungs, the paranasal sinuses, the joints, the uterus and the tubes. Though a considerable number of accidents have been reported,[1] these oils find a growing use.

In all the literature there is, however, one striking lack: the almost complete absence of any laboratory tests as to the comparative merits of the various oils on the market, in regard, for example, to toxicity, irritating qualities, stability and absorbability. Indeed, it must be admitted that their introduction into radiography has been an empiric, and sometimes almost accidental, development. Both of the original iodized oils were put on the market many years ago as palatable forms of iodine. They are, essentially, iodized vegetable salad oils (sesame, poppy). Some years later, it was discovered that they could be administered by injection. By this time, the use of the roentgen ray had become widespread, and it was found that intramuscular deposits cast a shadow on the plates. Sicard and Forestier[2] deserve the credit for having utilized their opacity for outlining cavities of various kinds, and finally, of attempting to localize spinal cord tumors by their aid.[3] Within a year, two new oils, especially designed for diagnostic use, have been prepared, one a third iodized oil, iodumbrin,[4] and the other a brominized oil, contrastol.[5] Apparently, no detailed description of the precise chemical composition or biologic effect of either of these is available yet in this country. The firm of Passek and Wolf (Hamburg) has furnished a sample of the latter, which is not yet on the market. It is found to have the brown color and paintlike consistency of a vegetable oil, and is stated to have a bromine content of 25 per cent. It casts a shadow almost as dense as that of iodized poppy oil.

An investigation into the comparative merits of various types of halogenated oils was begun at this laboratory during the past winter. The plan was, not only to test the opaque oils then available (iodipin, lipiodol, lipiodol ascendant), but to make a number of other halogenated oils of different chemical compositions and physical properties for comparison. The following oils were selected on account of their distinctive characteristics: rape-seed oil (highest specific gravity), castor oil (highest viscosity), linseed oil (high iodine value), cod liver oil (animal oil of high iodine value), poppy oil, olive oil (typical semidrying vegetable oils), neat's-foot and lard oil (the liquid portion of typical body

* From the Laboratory for Surgical Research, Harvard Medical School.

1. Maclaire, A. S.: Lipiodol in Neurosurgery, with Report of a Case with Deleterious Results, Am. J. M. Sc. **170**: 874-880 (Dec.) 1925. Sharpe, W., and Peterson, C. A.: Danger in the Use of Lipiodol in the Diagnosis of Obstructive Lesions of the Spinal Cord, Ann. Surg. **83**: 32-41 (Jan.) 1926.
2. Sicard, H., and Forestier, J.: Méthode générale d'exploration radiologique par l'huile iodée (lipiodol), Bull. et mem. soc. méd. des Hôp. de Paris **40**: 463 (March 17) 1922.
3. Sicard, J.; Paraf, P., and Laplane, L.: Radiodiagnostique rachidien lipiodolé, Presse méd. **31**: 885, 1923.
4. Moeller, P., and von Magnus, R.: Investigation of Bronchial Affections by Means of Iodine Preparations (Iodumbrin and Lipiodol), Acta med. Scandinav. **63**: 174, 1925.
5. Dyroff, R.: "Contrastol," ein neuer Kontrastmittel für die Darstellung engkalibrigen Hohlräume, Deutsche med. Wchnschr. **52**: 397, 1926.

fat), porpoise oil (low viscosity animal oil), parsley-seed oil (low viscosity vegetable oil) and spermaceti oil (lowest specific gravity, unusual chemical composition).

At first the attempt was made to prepare from each oil the most concentrated iodine compound that would remain stable. The standard methods were used and a new one, as yet unpublished, was devised. All seemed to yield about the same results. It was found that the physical characteristics of the resulting compounds at once narrowed the field to the semidrying vegetable oils and sperm oil. Neat's-foot oil can be iodized to about 11 per cent and still remain stable; such a compound might be used in place of lipiodol ascendant if the corresponding brominized oil did not possess certain additional advantages. All the others formed thick, ropey compounds which were obviously unsuitable for injection.

The corresponding bromine compounds were then made. This was done by adding the bromine directly to the oil with vigorous stirring. The reaction is endothermic. The use of hydrobromic acid, as called for by Merck's patent, appears unnecessary. However, the oil must be carefully washed, neutralized, and tested subsequently. Bromine forms substitution as well as addition products with most oils, and hence it is not necessary to use highly unsaturated oils to obtain a high halogen content. Stable compounds containing 40 per cent or more of bromine were formed with all of the oils tested. Brominized lard oil and sperm oil proved to be the least viscous of these compounds. The former is slightly less opaque than 40 per cent lipiodol or iodipin, the latter slightly more so. Both are more stable than the corresponding iodine compounds, and will even stand boiling, as will contrastol. They have the advantage that if used in a situation where they may be rapidly absorbed (e. g., in the bronchi) they will produce bromism, which is preferable to iodism.

Next came the problem of determining the relative irritating qualities of these various oils. Irritation is most to be feared when they are used intraspinally; an oil which is tolerated by the meninges will probably be tolerated by other tissues of the body. Accordingly, doses of from 1 to 2 cc. of the more promising oils were injected into cats by cisternal puncture. The animal was observed, and fluid was drawn again the next day for cell count. But this operation is an uncertain one in experimental animals, and it was difficult to amass a trustworthy series of observations.

A more satisfactory test was the injection of small amounts (0.05 cc.) into the anterior chamber of the cat's eye. There is a close anatomic and physiologic similarity between the aqueous humor and the cerebrospinal fluid, and the injection is technically easier and more uniform. The white count of the fluid taken twenty-four hours later was used as an index of the irritation caused by the injected material, and seemed to run parallel with the spinal fluid count after cisternal injection. The spinal canal was reserved for the determination of the fatal dose, symptoms after the injection, roentgen-ray appearance of the oil, its fate, etc.

It immediately became apparent that the vegetable oils were without exception more irritating than the animal oils tested. Under the conditions of the experiment, the injection of 0.05 cc. of iodized vegetable oil (iodipin or lipiodol) produced a white count of from 2,000 to 5,000. The 11 per cent "ascendant" oil usually gave lower figures than the more highly iodized one. Contrastol gave white counts of from 500 to 1,000 cells. It was found to be rather ropey and hard to manage, however. About the same counts were found after the injection of brominized sperm oil, which is very fluid. Properly made samples of iodized and brominized lard oil were followed by white counts of from 150 to 500 cells. The degree of halogenation appeared to have a slight effect on the irritating qualities of the oil.

The attempt was made also to inject the same amount of air—0.05 cc.—measured as well as might be at the temperature and pressure of the ocular contents—into the anterior chamber. The measurement is admittedly rough, but the resulting bubble usually seemed about the same size as the globule of oil. White counts varied from 2,000 to 8,000. Of course, it is well known that there are almost always signs of meningeal irritation following ventriculography, and white and red cells appear in the spinal fluid, but that it possessed such marked irritating qualities was an unexpected result. More striking still is the difference in the visibility of comparable amounts of halogenated oils and air; as little as 0.01 cc. of opaque oil can be distinguished easily in an animal's eye, while it may be impossible to recognize even large bubbles of air radiographically.

The tolerated dose of these compounds in the subarachnoid space of animals depends on several factors, some of which are difficult to evaluate. The cisterna appears to be the only feasible site of injection, so that the oil is brought directly into contact with the respiratory centers, and usually flows at once into the region of the foramina of Luschka. The space (in cats, the animals usually used) is so small that little oil can escape down the cord, and amounts larger than 1 or 2 cc. are forced over the convexity or into the ventricles. Thus, the conditions are far less favorable than in the human subject. The more sticky, paintlike compounds usually produced an acute hydrocephalus at once. The commercial iodized oils as well as the brominized oils were tolerated in doses up to 2 cc. The resulting symptoms—ataxia, stiff neck—were similar, and seemed to be the result of the presence of a foreign body about the cerebellum and brain stem, rather than that of great irritation. If the oil made its way into the ventricles, the animal usually died in convulsions within twenty-four hours. The shadows cast by the halogenated vegetable oils are sharp, distinct and invariable, while brominized lard oil casts a more diffuse shadow, which gradually spreads through the subarachnoid space, producing a general clouding. At least 10 cc. of air must be injected into the cat's cistern to be visible in plates, and this dose is often fatal.

As to absorption, it is slow with all types of oil, but the animal oils are more rapidly taken up than the vegetable ones. Drops of iodipin injected into the eyes of rats three months previously appear quite unchanged, while a drop of brominized lard oil is absorbed in about four weeks from the same situation. It appears from the work of Binet and Verne[6] that normal animal fats are absorbed from the subcutaneous tissues of the rabbit much more quickly than vegetable oils. Thus, at the end of seventy-two days, a drop of horse oil had entirely disappeared, while a drop of olive oil persisted apparently unchanged. Olive oil was also more slowly absorbed than caballine oil from the pleura.[7] Gases

6. Binet, L., and Verne, J.: De la destinée des huiles injectées dans le tissu sous-cutané, Compt. rend Soc. de biol. **93**: 421-422 (July 17) 1925.

7. Binet, L., apd Verne, J.: Sur l'absorption de l'huile par la plevre, Compt. rend. Soc. de biol. **91**: 66 (June 20) 1924.

have, of course, the great advantage of disappearing more rapidly than any oil.

The difference in behavior between animal and vegetable oils is doubtless partly explained by the fact that the former are readily emulsified, and emulsification is the first step toward absorption. It is not difficult to make permanent ("critical") emulsions of brominized lard oil in menstruums that are barely alkaline but contain little salt; but to make even temporary emulsions of the halogenated vegetable oils requires a very alkaline medium, or else a great excess of colloidol material. Emulsions of brominized lard oil in a bland medium (an isotonic mixture of glucose and sodium bicarbonate solution) may be used in the subarachnoid space, but they prove to be more irritating than any one of the ingredients used alone. They are, nevertheless, shown to be no more irritating than air by the cat's eye test, and may be of value on account of their diffusibility. These emulsions may be made so fine that they can be injected intravenously without causing fat embolism, but so far no application of this phenomenon has been found. Dr. Fletcher Colby and I are investigating the application of such emulsions to pyelography, and other uses for them will doubtless be found.

Like the iodized oils, the bromine compounds appear to be self-sterilizing. No infections have resulted from their use, and they do not become rancid, even when allowed to stand at room temperature. They will stand high temperatures, even autoclaving, without setting free bromine, but there is some danger of hydrolysis. It seems preferable to keep the oil in a jar under a thin layer of 95 per cent alcohol, which not only insures sterility, but would extract moisture or the products of hydrolysis if present.

The 11 per cent brominized lard oil has been used intraspinally in one obscure case in Dr. Harvey Cushing's service at the Peter Bent Brigham Hospital. It did not, it is true, lead to a diagnosis, but appeared to do no harm. At necropsy the patient was found to have periaxial encephalitis; there was no sign of irritation from the injected oil. Other clinical tests are in progress.

SUMMARY

1. In a comparative laboratory study of various halogenated oils, it was found that the animal oils are less irritating, more easily emulsified, and more quickly absorbed than the vegetable oils at present in use.

2. By forming bromine substitution products, rather than iodine addition compounds, various animal oils may be made sufficiently opaque for many radiographic purposes.

3. From several comparative biologic tests for such materials it appears that air is more irritating to the tissues than any of the oils in use.

4. Lard oil containing 40 per cent bromine appears to be the most suitable of the oils tested for myelography, pneumography, etc.

5. Lard oil containing 11 per cent of bromine has a lower specific gravity than the body fluids, and might be used for ventriculography by the spinal route, to outline the surface of collections of fluid, etc.

6. Permanent emulsions of these oils may be made, and are fine enough to be injected intravenously. They may be useful in pyelography, etc.

7. Brominized sperm oil is the darkest and at the same time the least viscous of the halogenated oils tested. It is more irritating than lard oil, and does not emulsify easily, but may find special uses.

Peter Bent Brigham Hospital.

OCULAR SYMPTOMS IN SUBARACHNOID HEMORRHAGE

A CLINICAL CONSIDERATION *

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Blood in the subarachnoid space may be due (1) to a primary intracerebral hemorrhage in which the bleeding occurs in the brain proper and which reaches the subarachnoid space or the ventricles by bursting through the brain substance, and (2) to the rupture of a meningeal vessel (or aneurysm), which may be either spontaneous or traumatic.

It is with the spontaneous rupture of a meningeal vessel (or aneurysm) that I especially wish to deal.

In this paper I have drawn largely from the work of Symond,[1] Riddoch and Goulden,[2] and Leslie Paton,[3] whose recent investigations have given us a clinical picture, which, with almost certainty, may be recognized at the bedside.

The subject seems to me timely, for besides not being generally known, it represents the clinical side of an investigation that is interesting nowdays when medical schools and hospitals are stressing the importance of laboratory research.

The two following cases[4] are illustrative:

CASE 1.—Mrs. G. M. S., aged 44, was seen, Nov. 8, 1924, with the provisional diagnosis of cerebrospinal meningitis. On the day of the onset of her illness, October 21, the patient awoke feeling unusually well, and found that she was menstruating. That afternoon she drove her car to an entertainment, and on leaving the car she noticed that her hat felt tight, and headache, of which she had long been a sufferer, was coming on. Removing her hat, she felt a bursting sensation within her head, and within a few moments the most severe headache that she had ever experienced had developed. The pain was terrific; it seemed to start in her back between the shoulder blades and tear through to the back of the neck into the top of the head. She became dizzy and felt that she would collapse. She excused herself, drove home, and immediately went to bed. She remembered nothing more concerning this onset. For five days she was nauseated and vomited. The headache was intense, and while she was never unconscious, at times she was irrational and very confused mentally. She later became most irritable and hysterical. The jar of the bed or any movement of the body, especially of the head and neck, would excite great pain. At this period, that is, within the first week of her illness, she developed defective sight in both eyes, and in the right eye she could make out a large red spot even with the lids closed. Three days before admission to the hospital she could not see how to eat; likewise the hearing, which had always been a little bad, suddenly became more defective in the right ear.

On the tenth day of her illness, all symptoms greatly improved and she was allowed to get up and walk into her garden. That day, she was found unconscious in her bath room. Then all the symptoms recurred with greater violence. About twelve hours after this fall, she expelled some blood from the back of her throat, which greatly relieved her of the pain in the back of the head and neck. As her condition was rapidly growing worse, she was brought to Atlanta, and

* Read before the Section on Ophthalmology at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

1. Symond, C. P.: Contributions to the Clinical Study of Intracranial Aneurysms, Guy's Hosp. Rep. 73: 139 (April) 1923.

2. Riddoch, G. B., and Goulden, Charles: The Relationship Between Subarachnoid and Intra-Ocular Hemorrhage, Brit. J. Ophth. 9: 209 (May) 1925.

3. Paton, Leslie: Ocular Symptoms in Subarachnoid Hemorrhage, Tr. Ophth. Soc. U. K. 44: 112, 1924.

4. I am indebted to Dr. Cyrus W. Strickler for the privilege of seeing and reporting these cases, which occurred in his service at the Wesley Memorial Hospital, Emory University.

while en route she expectorated another clot, which made her more comfortable.

Her mother had died at the age of 76, of malaria. She had high blood pressure and leftsided paralysis for some months prior to her death. The father, at the age of 80, died of "grief" following the death of his wife. There are two brothers and two sisters living and in good health. There is no family history of cancer, tuberculosis or endocrine disorders. There is a familial tendency to sick headaches. The father suffered severely from them, and they are manifested in all five children, but worse in the patient. There is no history of this condition in the mother, grandparents, aunts or uncles.

The patient had the usual exanthems without complications. She had been happily married twenty years and had three normal children, with no other pregnancies. She was an active, energetic woman in her home and society. She ate a full diet and slept well. Acetylsalicylic acid was frequently taken to ward off headaches, the chief deviation from good health. These headaches, which were described as "periodic sick headaches," had followed her since youth, coming on once or twice a month and nearly always associated with her menstrual periods. They frequently lasted several days and were often accompanied by nausea and vomiting. There had been a tendency for them to decrease during the past twelve months, with an increase in her general well being. The headaches generally began in the occipital region and localized in one or both temples, and were described as darting and drawing in character. During these seizures there were prostration, a moderate rise in temperature, irritability and a desire to be left alone. The menstrual history was unusually regular, but she believed that she was now passing through the climacteric. The last menstruation was at the onset of this illness, October 21, and the November period was missed.

She had been slightly deaf for several years, and on account of a defect in breathing a double middle turbinectomy was performed some years ago. She had always enjoyed good sight. There had never been falling spells, unconsciousness, dizziness or disturbances in gait, and her mind had always been active.

The patient was well nourished and weighed about 130 pounds (59 Kg.); her complexion was sallow. She was apparently in great pain and lay on her right side with her head retracted. When she was placed on her back, opisthotonos was detected. The posterior neck muscles were rigid and had been so since the onset of the illness. A general neurologic examination was negative except for the second, third and eighth nerves, which will be mentioned later. All sensations and reflexes were normal. Examination of the thoracic and abdominal viscera revealed them to be within normal limits. The vascular system was normal as far as could be detected, and the systolic blood pressure was 128; the diastolic, 80. The mouth was foul, with several bad teeth, and the gums bled easily. The tonsils were small and showed no infection. The middle turbinates had been completely removed, and no secretion was detected in the nares. Dried blood was seen on the left septum. The mucosa of the nasopharynx was very dry, and no abnormalities were seen. The right eardrum was normal in appearance; watch tick was not heard; air conduction with a medium toned fork equaled bone conduction, which was reduced. The left drum was normal; watch tick was heard at 2 inches, and air conduction equaled bone conduction, which was normal.

The eyes externally were normal, and there was no nystagmus, paralysis or ptosis. The pupils were round and sluggishly active to light, and the right was smaller than the left. Visual tests could not be made, but the patient complained of bad sight in the right eye. The right fundus showed an indistinct red reflex in the upper part of the vitreous and many black masses and red, flamelike opacities in the lower part, which were considered to be blood. Neither the disk nor any of the retinal vessels could be seen.

The left fundus was entirely normal, with a normal reflex stripe to all vessels.

On the day of admission, a spinal tap gave bloody spinal fluid. A second tap was again made in the space above, which likewise gave bloody fluid. This fluid did not give a bacterial growth, and the Wassermann reaction was negative. Other taps were subsequently made and, while free of macroscopic blood, they were all highly colored yellow. A smear of this fluid showed: small lymphocytes, 80 per cent; polymorphonuclears, 16 per cent, and large lymphocytes, 4 per cent. The blood count was: red cells, 4,520,000; white cells, 10,500, 80 per cent of which were polymorphonuclears, and the hemoglobin was 85 per cent. The urine was constantly normal. The temperature and pulse were never above 100 for the first ten days.

On account of the sudden onset of the illness, the terrifying headaches and pains in the back of the neck, opisthotonos, blood into the spinal canal, blood into the vitreous of the right eye and a contracted right pupil, a sudden loss of hearing in the right ear and an absence of other clinical and laboratory findings pointing to an acute infection, it was suggested that a more probable diagnosis would be a spontaneous rupture of a meningeal vessel at the base of the brain.

The events leading to the patient's recovery rather justified this conclusion. Under rest in bed and supportive treatment, her improvement was gradual until the eleventh day of her hospital stay, when a suppuration in the right parotid gland developed, which required multiple incisions for drainage. While her condition resulting from this infection was temporarily alarming, her recovery was prompt and she was dismissed to enjoy Christmas day with her family. Subsequent examinations found the patient well and free from headaches; and, while the vision in the right eye was still defective, the hemorrhage was absorbing and an indistinct view showed the disk and vessels normal.

One naturally asks: Did a cardiovascular disease on the mother's side and familial headaches of unknown type and origin, from which the father and his five children suffered, play any part in causing the pathologic condition under consideration?

On account of nasal hemorrhage and the involvement of the right eye and ear, I believe that the right internal carotid as it branches to form the anterior and middle cerebral vessels, a favorite site for the formation of aneurysms, was the vessel involved.

Of interest is the origin of the blood clots, which the patient twice expelled from the nasopharynx. Only one explanation occurs to me and that is a leakage of blood into the anterior fossa where, under pressure, an avenue of escape into the nose was made through the cribriform plate of the ethmoid. One naturally thinks of some opening into the sphenoid cavities, but there was no clinical evidence that this was true, and on account of the illness of the patient no roentgenogram of the skull was made.

The sudden impairment of hearing of the right ear was probably due to an extension of blood into the internal auditory meatus.

CASE 2.—R. E. L. B., a man, aged 54, was admitted to the hospital, March 4, 1925, complaining of mental confusion, nausea and vomiting, which had been present for twenty-four hours. The family and past history were unimportant except that he had been a hard working executive, and for some years previous he had had attacks of nosebleed. His habits were good and he did not use tobacco or alcohol. About Christmas, 1924, he awoke one night complaining of intense headache in the frontal and occipital regions, which lasted two hours. He then passed into a stupor, followed by persistent hiccup, nausea and vomiting. This state lasted two days, and when he recovered he found himself exceedingly weak. Within a week he was able to be up, when a similar attack developed, which lasted two days. Following this attack his blood pressure was reported to have been high. After a few days he was again attending to his office duties. Feb. 20, 1925, he again had a mild seizure, with nausea, vomiting and hiccup. The final attack, which brought the patient to the hospital, occurred, March 3, with the train of symptoms already mentioned.

Since the original attack, he had complained of diplopia and photophobia. Convulsions or body twitchings were never present, but after the last attack he complained greatly of a stiff neck, which gave him much discomfort on motion.

The patient, who was well nourished, was in a semistupor, with a Cheyne-Stokes type of breathing. The temperature on admission was 97, but on the eighth day it had risen to 102, and then it gradually receded to normal.

A physical examination of the chest showed a slightly enlarged heart, with a systolic blow over the apex. There were a few musical râles heard over both lungs. The abdomen was normal. The oral cavity was foul, with many bad teeth. A general neurologic examination was negative except for inactive knee reflexes and plantar responses. The systolic blood pressure was 202; the diastolic, 120.

The urine was normal. The blood picture was: red blood cells, 5,000,000; white blood cells, 14,250; hemoglobin, 100, and polymorphonuclears, 82 per cent. Chemical examination of the blood gave normal results. The blood and spinal Wassermann reactions were negative. March 13, the spinal fluid, which was free of blood, contained 45 cells.

The eye examination, March 4, showed a convergence, but as the patient was stuporous, I could not definitely define a paralysis. The pupils were equal, were small, and reacted sluggishly to light.

The right fundus was normal in all details, except for an increase in the reflex stripe of the vessels. The left, likewise, was normal, except for a yellowish-white patch in the retina, about the size of the disk, situated 2 diopters downward and temporally from a normal disk. This area was probably absorbed blood, and it was not connected with any large retinal vessel.

The patient's progress was marked; the mental state improved daily, and the blood pressure was becoming lowered.

March 13, there was no diplopia. The pupils were round and active and the left smaller than the right.

March 18, the pupils were equal and round. There was no diplopia and the fundus picture was unchanged.

March 22, the patient awoke at 4:30 a. m., complaining of headache. A severe general convulsion was followed by unconsciousness. A second convulsion occurred at 7 a. m. The pulse jumped from 82 to 126. The respiration was of the Cheyne-Stokes type. The spinal fluid was bloody. Eye examination at 8:30 a. m. revealed a fairly large, dark red hemorrhage situated between the old patch and disk margin in the left eye. This hemorrhage was not connected with any large vessel; disk rings and a shallow cup were present. There was no change in the vessels. The right eye was normal.

March 23, the general condition was worse and the patient was unconscious. The retinal hemorrhage was larger and darker, and appeared to be partly subhyaloid.

March 24, the patient died. No necropsy was allowed.

I am aware that the age of the patient and his high blood pressure, indicating a pathologic condition of the vessels, may exclude the case from the classification that I endeavor to make. I also realize that the failure to substantiate the diagnosis by the necropsy weakens my conclusions, but in my judgment clinical signs were present. Without premonition and without exertion, in a person apparently healthy, a hemorrhage from a meningeal vessel developed. Nosebleed, prominently mentioned as a premonitory symptom in subarachnoid hemorrhage, was noted. Stupor, nausea, vomiting, hiccup, stiff neck, slight elevation in temperature, increased blood pressure, ocular signs (unequal pupils, muscle palsies, retinal hemorrhage) and bloody spinal fluid were the more prominent symptoms.

A fresh retinal hemorrhage, unattended by papilledema or venous engorgement, was detected four hours after the onset of the fatal attack. It might be explained by the convulsion, which temporarily raised the general systolic blood pressure. But that would not likely be the cause when there was evidence of a former hemorrhage and no previous history of convulsions.

COMMENT

The symptoms of subarachnoid hemorrhage from the spontaneous rupture of an aneurysm or a weakened vessel wall of one of the basal arteries are so distinctive that a diagnosis can often be made without the aid of a lumbar puncture, but as Riddoch and Goulden [2] suggest, "it is clinched when blood is found in the spinal fluid."

These cases occur at an age when cerebral hemorrhage is uncommon. The immediate cause is usually assigned to a sudden rise in blood pressure, which may be induced by exertion or even excitement. The vessel changes are described as "an inflammatory or a degenerative arterial disease," but Symond records instances in which the rupture occurred in "congenital aneurysms," which term is used only to convey the impression of some congenital maldevelopment in the vessel wall.

The arterial system at the base of the brain, especially those vessels embracing the circle of Willis, seems most prone to aneurysmal formation. This is probably due to the lack of proper anatomic support, when compared to the other cerebral vessels, and to developmental weakness, which seems to be most marked at the bifurcation of the internal carotid, forming the anterior cerebral and the middle cerebral arteries.

The symptoms may be classified as premonitory and clinical. Of the former, paroxysmal headaches, resembling migraine, are common, and in some cases it seems possible that they are due to slight cerebral leakage. Periodic tinnitus, mentioned as a frequent symptom associated with headaches, often culminates in vomiting. Lethargy, yawning, and sensations of heat on the top of the head have been known to disappear after epistaxis.

The onset is always sudden, and usually follows some sort of activity sufficient to raise the blood pressure temporarily, although in case 2, a seizure developed while the patient was resting; severe occipital and temporal headache is commonly one of the first signs. Stupor or coma rapidly follows, and when the coma is profound, the clinical picture is indistinguishable from that of fatal apoplexy. At this stage convulsions may occur, which indicate a severe hemorrhage.

Symptoms resembling meningitis develop early; pain in the neck muscles, a rigid neck, opisthotonos, mental confusion or delirium, restlessness and severe pains in the limbs are prominent.

Of the neurologic signs, the abdominal reflexes and an extensor plantar response are diminished as the result of pyramidal disturbance, and a positive Kernig's sign is often present on both sides. The third and sixth cranial nerves are frequently disturbed, probably from local pressure, and conjugate deviations have been mentioned. The fundus lesions are to be discussed separately.

The pulse rate may be normal, and the temperature may show a moderate rise, which is attributed to hemolysis.

The spinal fluid is always bloody.

COURSE

Recovery from the first seizure is common, unless the hemorrhage has been severe. Consciousness returns; ocular palsies and stiff neck disappear, and reflexes become normal within from one to three weeks. Men-

tal confusion often persists longer, but in time the recovery is complete. A recurrence is frequent, especially when activities are allowed too early, and any attack may become fatal.

OCULAR CHANGES

Visual disturbances, so frequently noted, can be attributed to optic nerve changes and to retinal or vitreous hemorrhages. Instances are recorded, in case 1, for example, of temporary amaurosis without visible fundus change. This phenomenon may be explained by a hematoma within the nerve sheath, or by the direct effect of the hemorrhage on the chiasm, tract or intracranial portion of the nerve. Visual field changes, difficult to obtain on account of the mental state of the patient, vary according to the size and position of the hemorrhage.

Of the intraocular changes, papilledema is the most frequent, although it did not occur in my two cases. It is usually bilateral and, when directly due to a large hemorrhage within the nerve sheath, its onset is sudden.

Papilledema, however, may develop several days after the occurrence of the intracranial hemorrhage, and then it is probably the result of a hematoma acting as a tumor producing intracranial pressure. I agree with Paton that, should this primary hemorrhage be large enough to produce a sudden rise in intracranial pressure, the patient usually dies before it can produce any effect on the tissues of the optic nerve or disk. The same author records a case of encysted hematoma, in which papilledema did not develop for some months.

This papilledema, then, may develop from a rise in intracranial pressure or a large hemorrhage within the subarachnoid space of the nerve. In each instance not only is the central vein in the subarachnoid space flattened as the result of compression by fluid or blood, but likewise a traction of the vein occurs at the point at which it leaves the nerve and pierces the dura, the result of a separation of the dural and pial sheath.

As the outcome of this mechanical disturbance to the venous circulation, there occurs a venous obstruction which is usually sudden, although one may conceive that it may also be slow; the result is a retardation of the return venous flow from the retina with its usual consequences.

Intra-ocular changes are not always present in subarachnoid hemorrhage. This may be due to the mildness of the attack, to the situation of the ruptured vessel, or to a thickening or to adhesions at the site of bleeding from former attacks, thus cutting off communications with the optic nerve.[2]

Retinal hemorrhages are more common, I believe, than are recorded. They occur as a result of a venous engorgement in association with papilledema, which may be analogous to retinal hemorrhages resulting from venous thrombosis. Likewise they are found in eyes without evident optic nerve or retinal vessel injury.

In cases I have observed, papilledema was not present, nor were the veins of the retina engorged, and in case 2 the retinal hemorrhage situated near the disk was not connected with any large vessel.

The cause of this type of hemorrhage is difficult to explain, although Paton believes that "they are due to direct leakage of blood from the sheath through the lymphatic spaces at the sides of the lamina cribrosa and along the central vessels into the disk head and retina and preretinal tissue."

These hemorrhages occur in the inner layer of the retina; they are not very large, and have no characteristic appearance, except for the inference already made. When these hemorrhages are severe, they rupture into the vitreous.

The existence of any connection between these intraocular lymphatic spaces and the subarachnoid has been denied. Riddoch and Goulden, in their protest, cited the experimental work of Schwalbe, who demonstrated that fluid injected into the subarachnoid space of the brain did not pass farther forward than the culdesac at the anterior end of the optic nerve, and of Sicard, who proved that fluid (Chinese ink) did not penetrate the pial sheath of the nerve. Riddoch and Goulden were also able to substantiate their views by having the opportunity of examining an eye microscopically which contained papilledema and hemorrhage. They found that blood which had distended the sheath had not infiltrated the nerve, or the vessel sheath within the nerve.

In cases of venous engorgement, with or without papilledema, I think that there is a unanimity of opinion that the retinal hemorrhage is probably the result of a venous block. There are a few cases reported, including case 2, in which retinal hemorrhages are present in eyes free of nerve edema or venous engorgement.

The explanation which seems most logical to me, recalling the mechanism of this venous block, is that at some time prior to the detection of the hemorrhage, an increase in the intra-ocular venous pressure must have existed. It might have been slight, but quite sufficient to engorge the venous capillaries and produce a hemorrhage without causing any manifest change in the optic disk. Then the rapid absorption of a not too large amount of blood within the sheath would quickly relax the tension on the vein and restore the circulation to normal.

PROGNOSIS

The very location of these meningeal hemorrhages makes the prognosis grave, and treatment by therapeutic or surgical means is of little value. Recoveries do occur, but always with the strong possibility of recurrences.

SUMMARY

Given a middle aged person, with (1) a seizure suggesting ingravescent apoplexy, accompanied by severe headache, (2) meningeal symptoms, such as pain and rigidity in the neck, opisthotonos and a positive Kernig's sign, (3) ocular complications, such as ocular motor disturbances, retinal hemorrhages and papilledema, and (4) a bloody spinal fluid, one is tempted to suggest a syndrome that justifies the diagnosis of spontaneous subarachnoid hemorrhage (from an aneurysm) involving a basilar artery.

Dietary Reform and Public Health.—Many physicians and biochemists who have followed the progress of discovery in this field (nutrition) are convinced that if the knowledge which we now possess could be applied in the daily selection of food for every family of Europe and America, there would result in a single generation a wonderful improvement in bodily size, symmetry and vigor in the population. There seems little room for doubt that a marked reduction of disease would also be the reward of an effective dietary reform. . . . The quality of the teeth is in great measure determined by the state of the nutrition of the child in prenatal life and in infancy. The structure of the teeth and their environment are determined by the food supply. Many and serious as are the problems confronting Europe and America at the present time none is more important than the application of the science of nutrition in the daily life of the people.—McCollum, E. V., in foreword to Belfrage, S. H.: "What's Best to Eat."

THE PREVENTION OF RICKETS IN PREMATURE INFANTS *

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It is conceded that premature infants and twins are more susceptible to the development of rickets,[1] spasmophilia [2] and anemia [3] than are full term normal infants. The minerals calcium and iron are known to be deposited in greater amounts during the later months of pregnancy, and consequently it has been realized that infants born earlier than full term possess a smaller and an inadequate mineral stock and soon after birth run short,[4] even though they are breast fed. This condition has been accepted generally as the reason, or at least the principal reason, for the increased incidence of the diseases mentioned above in premature and twin infants.

Another cause offered by some is that many premature infants suffer from what is termed "debility"; that is, as a whole they are less efficient human machines, and consequently present pathologic conditions sooner and with greater facility, and in severer forms, than do full term single infants.

Park [5] suggests as a causative factor the combination of immaturity of the organism and the great impetus for growth. All these reasons seem plausible to explain the clinical fact that premature infants and twins are very prone to develop rickets. Some observers [6] on the basis of their own experiences have concluded that it is impossible to prevent the development of early rickets in premature infants even with a liberal administration of cod liver oil.

The answer to the question as to whether a mild rickets is or is not present in an infant is now realized not to be so easy to give.

As both the clinical and the roentgenologic study of rickets cannot be free entirely from subjective interpretation, it is fortunate that an objective method exists such as the chemical analysis of the blood serum, which can be used as a guide in the clinical and roentgen-ray study of early rickets.

The constant success that we have had in curing and preventing rickets by feeding S. M. A. to rachitic and to normal infants over long periods of time prompted us to attempt to obtain with S. M. A. and Protein S. M. A. the same results in premature infants. Only once has one of us seen a full-term infant receiving S. M. A. over a long period of time show an abnormally low calcium and phosphorus content of his blood serum. The daily addition of 4 cc. of cod liver oil also had no beneficial effect. This infant came to us with symptoms of meningitis, and was seriously ill on several occasions during the ten months of observation by us with nasopharyngitis, otitis media, mastoiditis and lung involvement. At the necropsy a chronic nephritis was found. One other child has been seen by us to develop a severe rickets and osteoporosis even though receiving from 1 to 2 tablespoonfuls of cod liver oil daily. This was a severe case of chronic intestinal indigestion (carbohydrate and fat). The probability is that no fat was absorbed and, as a result, cod liver oil could not exert its action. For years it has been the custom of one of us [9] to increase the protein and mineral content of S. M. A. when used for premature infants. The scientific basis of the value of this practice for meeting the increased need of premature infants for calcium was recently given by Hamilton.[4]

Originally single strength S. M. A. was diluted with boiled skim milk. In order, however, to get more calories into the infant without raising the bulk of the

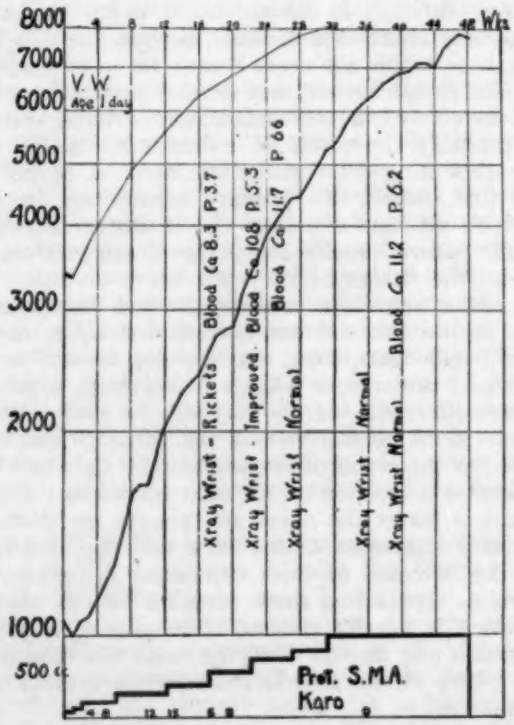

Fig. 1 (case 1).—Twin; birth weight, 1,050 Gm.; at forty-eighth week, 7,680 Gm.; rickets present eighteenth week in stage of beginning healing; improved at twenty-third week and normal at twenty-eighth, thirty-sixth and fortieth week.

food, we have in recent years replaced from one fourth to one half of the water in S. M. A. with boiled skim milk. The most common mixtures used by us now in the feeding of premature infants and in this series are:

(*a*) Double Strength S. M. A. (or Concentrated Liquid S. M. A.), 2 parts; boiled water, 1 part, and boiled skim milk, 1 part. This mixture has an approximate composition of: protein, 2.1 per cent; fat, 3.6 per cent; lactose, 8.6 per cent, and ash, 0.44 per cent. The cod liver oil content on the average is 3.5 cc. per liter.

(*b*) Protein S. M. A., which is an acid milk (lactic and citric), having an approximate analysis of: protein, 3.5 per cent; fat, 2.2 per cent; lactose, 2.8 per cent; ash, 0.6 per cent, and acidity, p_H 4.6. The cod liver oil content on the average is 2.2 cc. per liter. The citric acid is put in the milk in the form of lemon juice, 20 cc. to the liter, and the lactic acid is produced by bacterial fermentation.

Its curative value in human rickets has been established by us repeatedly with the roentgen ray and by

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* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

* From the Department of Pediatrics, School of Medicine, Western Reserve University; the pediatric wards of City and Lakeside hospitals, and the Babies and Childrens Hospital.

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blood study. However, because of its smaller content of cod liver oil and because of its higher protein content we were afraid that it might be inadequate for rickets prevention in premature infants. Fortunately, only to a very slight degree were we justified in this assumption, as the records below will show.

in keeping them gaining continuously in weight at a rate that is decidedly above that generally obtained and considered satisfactory. This was especially true of the premature infants weighing less than 2,000 Gm.

Of the seventeen premature infants (babies 1-13 and 15-16), fifteen received cod liver oil in some form

TABLE 1.—*Condition of Patient, Age, Weight, Gain, Diet, Amount of Cod Liver Oil, and Rickets Incidence, Prevention and Cure*

Key	Name	Age	General Condition	Food	Admission Weight, Gm.	End Weight, Gm.	Total Gain, Gm.	Days	Cod Liver Oil: Total Amount, Cc.	Cod Liver Oil: Minimum Daily, Cc.	Cod Liver Oil: Maximum Daily, Cc.	Cod Liver Oil: Average Daily, Cc.	Cod Liver Oil: Average per Kg. Gain, Cc.	Average Gain Daily, Kg.	Comment
1	V. W.	1 day	Premature twin	P. A.	1,050	7,680	6,630	332	482.94	0.33	2.20	1.4	72	0.020	Showed rickets 18th week and recovered from rickets 23d week on same food without additional antirachitic treatment (roentgen ray and blood)
2	R. W.	1 day	Premature twin	P. A.	1,150	7,280	6,130	332	494.32	0.33	2.20	1.4	80	0.018	No rickets (roentgen ray and blood)
3	E. Mc.	13 days	Premature, malnutrition	P. A.	1,425	6,225	4,800	217	311.18	0.66	2.02	1.4	64	0.022	No rickets (roentgen ray and blood)
4	E. H.	1 day	Premature	D SMA-Skim (11 weeks) D SMA-W-Skim (19 weeks)	1,650	5,250	3,600	210	408.93	0.52	2.69	2.2	130	0.017	No rickets (roentgen ray and blood)
5	M.	1 day	Premature	D SMA-Skim (11 weeks) SMA (10 weeks)	1,900	5,180	3,280	147	272.49	0.70	2.80	1.8	83	0.022	No rickets (roentgen ray and blood)
6	M. S.	1 day	Premature	P. A.	1,950	5,400	3,450	112	174.79	0.88	1.98	1.5	50	0.031	No rickets (roentgen ray and blood)
7	F. S.	5 weeks	Premature	P. A.	2,000	4,450	2,450	98	143.99	0.88	1.76	1.4	58	0.025	No rickets (roentgen ray and blood)
8	Cl. F.	5 weeks	Premature	P. A.	2,100	3,500	1,400	42	86.62	1.32	1.98	2.0	61	0.033	Hospital; developed and lost rickets and same food* (roentgen ray and blood)
					3,500	4,100	600	54	101.64	1.32	1.54	1.8	169	0.011	Contagious hospital
					5,000	7,750	2,150	98	215.60	2.20	2.20	2.2	100	0.021	Hospital
9	P. P.	1 day	Premature	D SMA-W-Skim	2,225	4,525	2,300	147	286.23	0.78	2.45	1.9	113	0.017	No rickets (roentgen ray and blood)
10	B. S.	1 day	Premature	D SMA-W-Skim	2,225	6,510	4,285	245	582.61	1.75	2.94	2.3	135	0.017	No rickets (roentgen ray and blood)
11	B. B.	1 week	Premature dehydrated	D SMA-W-Skim	2,350	5,510	3,230	140	357.21	1.40	2.80	2.5	110	0.023	No rickets (roentgen ray and blood)
12	Co. F.	3 mo.	Twin, dist. nutrition	P. A.	2,500	6,000	3,500	168	285.12	1.54	1.76	1.6	78	0.020	No rickets (roentgen ray and blood)
13	Ca. F.	3 mo.	Twin, dist. nutrition	P. A.	2,850	6,960	4,110	168	331.40	1.58	2.20	1.9	80	0.024	No rickets (roentgen ray and blood)
14	H. H.	1 day	Full term normal	D SMA-W-Skim (13 weeks) SMA (5 weeks)	3,050	5,225	2,175	133	274.17	1.76	2.80	2.1	126	0.016	No rickets (roentgen ray and blood)
15	A. C.	7 weeks	Twin, dist. nutrition	Casein (33 weeks)	2,675	6,300	3,625	231	1834.00	2.00	12.00	7.9	505	0.015	No rickets either time even though in the second instance cod liver oil was 1.8 in place of 7.9 (roentgen ray)
		10 mo.	normal	P. A. (9 weeks)	6,300	7,750	1,350	63	117.25	1.84	2.20	1.8	88	0.021	
16	H. C.	7 weeks	Twin, dist. nutrition	Casein (26 weeks)	2,050	5,400	3,350	182	1400.00	4.00	12.00	7.6	417	0.018	No rickets either time even though in the second instance cod liver oil was 1.7 in place of 7.6 (roentgen ray)
		8 mo.	Act. rickets	P. A. (16 weeks)	5,400	7,900	2,500	112	201.43	1.58	1.84	1.7	80	0.021	
17	B. M.	26 days	Twin, dist. nutrition	L. A. M. (16 weeks)	1,500	2,900	1,400	112	56.00	....	....	0.5	40	0.012	Cod liver oil, 8 cc. daily for 1 week temporarily cured rickets; rickets permanently cured on P. A.† (roentgen ray and blood)
		5 mo.	Act. rickets	P. A. (14 weeks)	2,900	4,950	2,050	98	164.31	1.07	1.98	1.6	80	0.020	
18	L. K.	4 mo.	Old prem. dist. nut.	Casein (11 weeks)	2,900	4,300	1,400	84	.....	....	....	...	...	0.026	Old premature. Birth weight approx. 2000. Disturbed nutrition‡
		6 mo.	Act. rickets	P. A. (10 weeks)	4,300	5,250	950	70	127.82	1.76	1.98	1.8	136	0.013	

* Breast fed five weeks. Forced fed with 1⅓ strength P. A. gained at rate of 35 Gm. a day. Rickets present (roentgen ray and blood) in six weeks. Measles seventh week. Transferred to Contagious Hospital. Gain less marked, average 8 Gm. daily. Blood normal thirteenth week. Home from fourteenth to twentieth week. Hospital readmitted twenty-first week. Blood normal twenty-fifth, twenty-eighth, thirty-first week (total 12 weeks) gain average 21 Gm. daily.

† On lactic acid milk with additional carbohydrate. Fifth week roentgenogram negative. Sixth week, 8 cc. of cod liver oil daily for one week. Twelfth week healing rickets, fourteenth week healed rickets, seventeenth week active rickets revealed by roentgen ray. Placed on Protein S. M. A. Healing rickets twenty-third week, healed rickets twenty-fifth week (roentgen ray and blood). In other words, the rickets after an interval of six weeks was temporarily healed by the one week of cod liver oil, but the amount of cod liver oil was insufficient to stop the reappearance of rickets after a second interval of six weeks, whereas the continuous intake of cod liver oil in the form of Protein S. M. A. with a daily minimum of 1.1 and a daily maximum of 1.98 cc. of cod liver oil was adequate to cure rickets permanently.

‡ Developed rickets on casein milk, seventh week (roentgen ray and blood); twelfth week active rickets still present. Protein S. M. A. eleventh week. Healing rickets (roentgen ray and blood), fourteenth week. Healed rickets, twenty-first week (roentgen ray and blood).

Key to Food: P. A., Protein S. M. A. (acidulated); D SMA, double strength S. M. A.; SMA, single strength S. M. A.; D SMA-W-Skim, 2 parts D SMA, 1 part water, 1 part skim milk; D SMA-Skim, 1 part D SMA, 1 part skim; L. A. M., lactic acid milk.

The carbohydrate content of the Protein S. M. A. was raised sufficiently to insure satisfactory growth, as the charts and tables show.[10]

We were especially fortunate in being able to observe our patients over long periods of time and to succeed within one or two days after admission, while one, baby 18, received cod liver oil after he had developed rickets on casein milk, and another, baby 17, while he was developing it and after he had developed it a second time, on lactic acid milk.

The last two were given Protein S. M. A. after rickets had developed and recovered from it (roentgen-ray and

10. The cod liver oil used in the manufacture of S. M. A. and Protein S. M. A. at this time usually came from Newfoundland. Occasionally Norwegian oil replaced it.

blood checks) while on this diet, even though they continued to gain in weight (see chart 18). These two cases serve to illustrate the curative effect that we have regularly experienced with S. M. A. and Protein S. M. A.

Baby 17, mentioned above, is of further interest, as it showed that a daily dose of 8 cc. of cod liver oil for the one week was sufficient to produce a picture of decided healing when the next plate was taken seven weeks after the beginning of the cod liver oil administration. Had roentgenograms been taken from one to possibly three weeks earlier, it is possible that evidence of cod liver oil action would have been recorded in this manner sooner. When the healing was first noticed, it was decided to see how long the effect of this one week's administration of cod liver oil would last. Nine weeks after the beginning of the week of cod liver oil

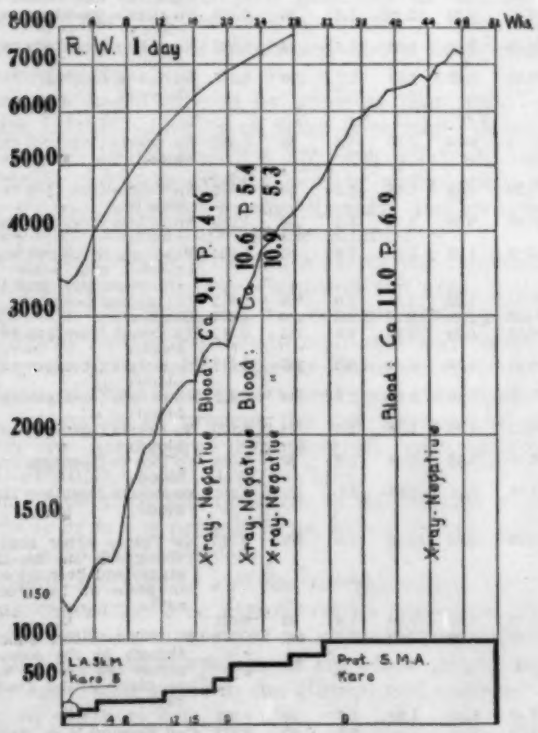

Fig. 2 (case 2).—Twin brother of patient 1; birth weight, 1,150 Gm.; at forty-eighth week, 7,280 Gm.; no rickets at eighteenth, twenty-third, twenty-sixth, fortieth and forty-fifth week.

administration, the bones were completely calcified; and three weeks after that, that is, twelve weeks after the beginning of the cod liver oil week, rickets was again present in an active form. Had blood serum chemistry studies been made during this period, we should be in a better position to know more accurately how long the one week of cod liver oil exerted a controlling influence over the calcifying process. From the findings in the roentgenograms taken, it seems as if the amount of cod liver oil consumed during one week, namely, 8 cc. daily, or 56 cc. for the week, was sufficient to establish the means for calcification for a period of from seven to nine weeks. For the seven week period, at the end of which healing rickets was revealed by the roentgen ray, the amount of cod liver oil ingested would represent a daily intake of 1.14 cc., and for the nine week period at the end of which the roentgen ray showed the bone completely calcified, 0.88 cc. daily.

When the active rickets had again appeared, the infant was given its cod liver oil in the form of Protein S. M. A., with enough carbohydrate to make it gain satisfactorily, which it did, as a matter of fact, better than before, gaining during this period an average of 0.20 Kg. daily as against 0.12 Kg. previously. The roentgenogram taken seven weeks after the beginning of feeding with Protein S. M. A. showed a healing rickets and two weeks later a healed rickets. The serum calcium and inorganic phosphate were normal at this time, being 10.4 for the former and 6.0 for the latter. It will be noted that the intervals between the beginning of the active treatment and the appearance of healing rickets on the one hand and of healed rickets on the other were the same for the two forms of treatment. During the Protein S. M. A. period the cod liver oil intake was as given in table 3.

For the seven weeks period, then, the total amount of cod liver oil ingested in the form of Protein S. M. A. was 63.74 cc., as against 56 cc. of straight cod liver oil taken during the one week period. This amount applied to the forty-nine days gives a daily intake of 1.14 cc., which is 0.16 cc. below the daily amount of cod liver oil taken in the form of Protein S. M. A., which is 1.30 cc. So if the rachitic factor is stored in the body, as we know other substances are, for instance,

TABLE 3.—*Cod Liver Oil Intake During Protein S. M. A. Period*

	Daily	Weekly	Period
First week	1.1 cc.	7.7 cc.	7.7 cc.
Second to seventh week, inclusive	1.32 cc.	9.34 cc.	56.04 cc.
Eighth week	1.32 cc.	9.34 cc.	9.34 cc.
Ninth week	1.5 cc.	10.5 cc.	10.5 cc.

iodine in the thyroid, we may be justified in assuming that the one week of cod liver oil representing a daily intake of 8 cc. and a weekly intake of 56 cc. was close to the amount necessary to keep in action the process that controlled calcification in this child at that time at an age of 3 to 4 months and at a weight from 2,400 to 2,800 Gm. for a period of approximately seven weeks.

Patients 1 to 13 all received their cod liver oil either in the form of Protein S. M. A. or in that of double strength S. M. A., to the latter of which at least during the earlier and longer period of observation proteins and minerals were added in the form of boiled skim milk (as explained in the footnote under table 1).

All of these infants, as the charts and tables show, gained very well in weight and were free from intercurrent diseases except one, baby 8, who developed measles. They remained on the diets sufficiently long to give them an adequate opportunity to develop rickets. Most of the serum chemistry and the roentgen-ray work was done at the time when we expected rickets to appear in these infants, during the third to the fourth month after birth. In a number of the infants, however, roentgen-ray and blood checks were made earlier, as for instance during the first, second, fifth, sixth, eighth and ninth weeks, and in most of the infants further roentgen-ray and blood checks were made after the optimal period for the development of rickets. Seven were examined during the fifth month; five during the sixth; three during the seventh; one during the eighth; one during the ninth; one during the tenth, and one during the eleventh.

Of the thirteen premature infants, seven were fed Protein S. M. A. and five double strength S. M. A., 2 parts; boiled skim milk, 1 part, and boiled water, 1 part, and one double strength S. M. A., one half, and skim milk, one half, and later single strength S. M. A.

As stated above, Protein S. M. A. per liter contains approximately 2.2 cc. of cod liver oil, and the double strength S. M. A. skim combinations approximately 3.5 cc. The daily intake of cod liver oil in the form of the foods mentioned above of course was decidedly less for all infants for some time because considerable time had to elapse before they were ready to consume daily a liter of food. As table 1 shows, the lowest daily intake for the entire group was 0.33 cc., whereas the largest was 2.8 cc. The average daily intake of cod liver oil for the entire group of thirteen was 1.7 cc. This, of course, does not mean that a daily intake of 1.7 cc. is adequate under all circumstances for every infant of an age and weight similar to that of the members of this group. Nevertheless, it does indicate that the daily amount of cod liver oil needed, if given early and regularly, is much smaller than one might imagine.

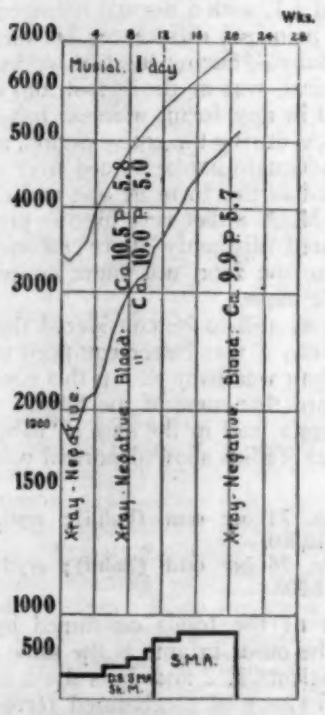

Fig. 5 (case 5).—Birth weight, 1,900 Gm.; at twenty-first week, 5,180 Gm.; no rickets at second, eighth, tenth and twenty-first week.

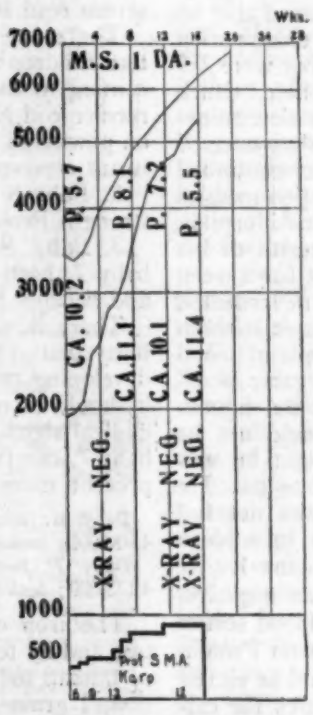

Fig. 6 (case 6).—Birth weight, 1,950 Gm.; at sixteenth week, 5,400 Gm.; no rickets at second, eighth, twelfth, thirteenth and sixteenth week.

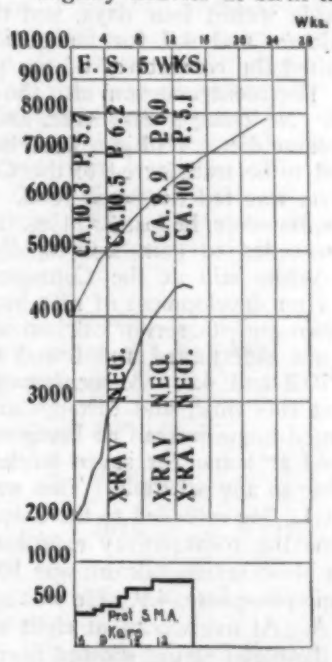

Fig. 7 (case 7).—Weight at 5 weeks, 2,000 Gm.; at nineteenth week, 4,450 Gm.; no rickets at fifth, eleventh, sixteenth and nineteenth week.

All of the infants fed on double strength S. M. A.-skim milk mixtures remained free from rickets, as did all but two fed on Protein S. M. A. (the data are given in the tables, charts and roentgenograms). The two infants developing rickets were babies 1 and 8.

Baby 1 (fig. 1) weighed 1,050 Gm. at birth and gained remarkably well, weighing 7,680 Gm. at the age of 336 days. At the age of 18 weeks, rickets was found present by roentgen-ray examination and by the blood serum study, which revealed a calcium content of 8.3 and inorganic phosphate content of 3.7. The gain in weight at this time had been remarkable, the child nearly trebling her birth weight at this time. The maximum daily intake of cod liver oil in the form of Protein S. M. A. was 0.88 cc. at this time. She was continued on the same diet and simply given more food, which raised the daily cod liver oil intake to 1.1 cc. Five weeks later the roentgenogram showed healing rickets and the calcium and inorganic phosphate content of the serum had reached normal figures, being 10.8 for the former and 5.3 for the latter. In three weeks the readings were 11.7 and 6.6. This followed three weeks of an increase in the food intake, which raised the daily consumption of cod liver oil to 1.54 cc. The roentgenogram of the wrist taken three weeks later showed a healed bone, which remained healed, as later roentgenograms demonstrated. During the fortieth week the calcium reading was 11.2, and the inorganic phosphate reading, 6.2.

This patient weighed at birth 100 Gm. less than her brother, baby 2, who on the same food and under the same care and roof did not develop rickets. The roentgenogram and the serum calcium and inorganic phosphate reports were normal, although the latter were just at the lower level of normal and did not rise to higher levels later on. It may be that he just escaped developing recognizable signs.

The brother, baby 2, being slightly heavier at birth than the sister (from 9 to 10 per cent), did not gain quite as rapidly, although there was not very much difference in their weight figures (fig. 2). When on the one hundred and twenty-sixth day rickets was discovered in the sister, her weight was 2,760 Gm. and the brother's, 2,725 Gm.; she had during this period since birth received 80.2 cc. of cod liver oil in the form of Protein S. M. A., and he 83.16 cc. Whether the slightly lessened gain and the slightly increased intake of cod liver oil were the factors in relatively protecting the brother, or whether the sister, because of her smaller size, was a slightly less efficient human machine, from the standpoint of avoiding rickets, is difficult to say. The remarkable thing is not that the one developed rickets, but rather that with the tremendous growth produced, rickets did not occur earlier and persist longer.

The other patient developing rickets was baby 8 (fig. 8). He was admitted as a premature infant at the

age of 5 weeks, and weighed 2,140 Gm. His birth weight is not known. He was nursed at the breast until he came to the hospital, and received neither cod liver oil nor orange juice. He was given one and one-half strength Protein S. M. A. with 9 per cent Karo in order that he might be given every opportunity to grow as rapidly as he could. The percentage composition of this mixture is: protein, 5.25; fat, 3.3; carbohydrate, 11.8; minerals, 0.69.

He grew precipitately in weight, rising at the end of forty-two days from his admission weight of 2,100 to 3,500 Gm., a gain of 1,400 Gm. The determination of the calcium and inorganic phosphate content of his serum at this time showed abnormal conditions existing, the figure for the former being 6.9 and for the latter, 3.9. During the second week after admission, the roentgenogram of his wrist was normal, and the calcium content of his serum was 9.3 and the inorganic phosphate content, 5.6. It was at first believed that an error had occurred. The second serum examination was made within four days, and the figures were 6.9 for calcium and 4.0 for inorganic phosphate, which established the correctness of the previous determinations. The roentgenogram also showed the presence of rickets. No change was made, and he was continued on the same diet. Within a week he developed measles and had to be transferred to the Contagious Hospital, where he was fed the same food. As a result of his measles, however, he lost 250 Gm. in weight for a week and proceeded to gain less rapidly, but nevertheless well. While still at the Contagious Hospital seven weeks after development of measles, a sample of blood was taken and its serum calcium and inorganic phosphate was determined and found normal, the figures being 10.2 and 4.8. A roentgenogram could not be taken at this time, and through an oversight he was discharged home instead of being returned to us. He remained at home for seven weeks and was not fed according to any schedule. This was from June 15 to August 1. He returned to the hospital, August 1. At this time the roentgen-ray examination was negative, and his blood serum calcium was 10.4 and blood serum inorganic phosphate, 4.9. He was again put on Protein S. M. A. At five weeks, at eight weeks and at eleven weeks the blood serum showed normal figures for calcium and inorganic phosphate.

In other words, this patient within six weeks after admission showed the roentgen-ray and the blood serum picture of rickets, but lost it again within seven weeks without a change in diet, and without any added cod liver oil. The drop in weight caused by the measles and a subsequent slower rate of growth very likely were factors in bringing this about. However, the combination of having been a premature infant on the breast for five weeks before admission and after admission of having had the opportunity of ingesting a liberal number of calories in the form of a high sour protein and high carbohydrate food with a resultant tremendous upward spurt in weight, even in the presence of an intake of cod liver oil which, though small, has been found to be adequate for other infants of the same age and weight, probably was very potent in developing the rickets. Had this infant, like, for instance, baby 7, received even only a small amount of cod liver oil, judging from the experience we have had with some of the other infants, and judging from the spontaneous disappearance of the rickets in this infant when the weight curve became less perpendicular, the rickets probably would not have developed in an infant of this size. The other infant just referred to, baby 7 (fig. 7) was of the same age when admitted, and weighed a little less, namely, 2,000 Gm.; but before coming to the hospital the infant had received breast milk for only one day and powdered S. M. A. for the remainder of the five weeks. She was also placed on straight Protein S. M. A. with a carbohydrate from 6 to 9 per cent. Within two weeks after admission her serum calcium was 10.3, and her serum inorganic phosphate, 5.7. At six weeks these figures read 10.5 and 6.2, and a roentgenogram taken at that time was negative. She had gained 1,250 Gm. during these six weeks, only 150 less than that of baby 8. The high carbohydrate of the food was then raised to 12 per cent, and the weight curve continued to climb. At eleven weeks the roentgen-ray examination still was negative, the serum calcium was 9.9, the serum inorganic phosphate 6.0, and at the fourteenth week the serum read 10.4 and 5.1, with a normal roentgenogram.

There are three principal differences between these two children: 1. Baby 8, during the five weeks before coming to the hospital, was at the breast and did not receive cod liver oil in any form, whereas baby 7 was on powdered S. M. A. during the entire period, and as a result received an adequate intake of cod liver oil.

2. Baby 8 received in the form of one and one-half strength Protein S. M. A. a diet very high in protein.

3. Baby 8 ingested distinctly more calories than baby 7, both because the food was more concentrated and because he took more.

There is, of course, still to be considered the possibility that at birth baby 7 was better equipped to avoid developing rickets than was baby 8. In this connection it should be mentioned that none of the infants showed clinical signs of anemia, and in the case of baby 6 and baby 7, careful blood studies showed normal conditions present, namely:

Baby 6: hemoglobin, 72 per cent (Sahli); erythrocytes, 4,900,000; leukocytes, 10,200.

Baby 7: hemoglobin, 76 per cent (Sahli); erythrocytes, 4,143,000; leukocytes, 8,000.

The iron content of the foods consumed by these two and by ten of the other infants is the same as that of human milk. Patients 1, 2 and 3 received, in addition, 1 grain (0.065 Gm.) of saccharated ferrous carbonate daily, patient 5 one-half grain (0.03 Gm.) daily, and patients 15 and 16 10 minims (0.6 cc.) of syrup of ferrous iodide daily for four months.

COMMENT

It is evident that rickets can be prevented and cured in premature infants and that the amount of cod liver oil required is relatively small.

The fact that two of the premature infants temporarily developed rickets, in our opinion, does not represent sufficient evidence to justify any other conclusion. The experience with these two infants simply indicates the course to be followed in the future in order to get 100 per cent protective results in premature infants. Namely: 1. To avoid encouraging an abnormally great and rapid growth. 2. To avoid permitting an excessively high protein intake. In one of our patients the protein percentage of the food was 5.2. Hess [13] makes the statement that rickets develops particularly on protein milk, and we have had the same impression for some time. It may be that the increase in metabolic rate produced in this way requires more of the antirachitic factor than would otherwise be

13. Hess, J. H., in Abt's Pediatrics 2: 477, 1923.

necessary. 3. To increase slightly the amount of cod liver oil over 2.2 cc. per liter of food, especially when the food consumed contains a relatively high protein percentage. It will be recalled, however, that five of the premature infants did not develop rickets on the mixture with a 3.5 per cent protein and 0.22 per cent cod liver oil content, and that no infants on the S. M. A. and skim milk combinations with a protein percentage of 2.1 and a cod liver oil percentage of 0.35 developed rickets. Consequently, any increase cod liver oil made will not have to be large.

Before considering the interesting question as to the exact quantity of cod liver oil required, let us consider why we feel justified in concluding as we do, and why others feel convinced that it is impossible to stop the development of rickets in premature infants even though cod liver oil is liberally administered.

There seems to us to be these possible explanations: 1. The cod liver oil was given to our protected infants as soon as they partook of food, as it was a part of the food. 2. Our diets contained enough minerals to meet the requirements of the premature infants' metabolism, as suggested by Hamilton. 3. By having the protein content of our mixture higher than that of breast milk, we probably met another as yet unproved requirement of the premature infant.

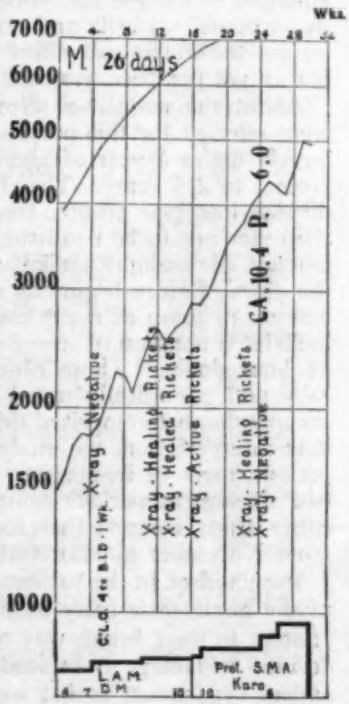

Fig. 17 (case 17).—Twenty-six days; weight, 1,500 Gm.; diet, to sixteenth week, lactic acid milk; cod liver oil, 8 cc. daily, during sixth week after admission. Roentgen ray negative during fifth week, but positive during twelfth (healing) and negative during fourteenth (healed). Roentgen ray positive again during seventeenth (active). Diet changed to Protein S. M. A. in seventeenth week. Roentgen ray shows healing rickets twenty-third week and healed twenty-fifth week.

These seem to us to be satisfactory answers. However, there may be others. For instance, the fat in Protein S. M. A. and in S. M. A. is homogenized and as a result is present in the food in the form of a very fine emulsion. Then S. M. A. fat contains coconut oil in about 15 per cent. McCollum, Simmonds, Becker and Shipley[17] found that coconut oil has the ability to cause calcium deposition in the bones; but as they conclude that it is less powerful in this respect than is butter fat and as we know that butter fat cannot prevent rickets, coconut oil probably can be dropped out of consideration. Finally, the content of lactose and the relationship of it to the protein and to the fat may play a rôle in making the production of rickets more difficult. It is well known that while breast fed infants develop rickets, they are not quite as liable to it as are infants fed with cow's milk.

The amount of cod liver oil found effective in the foods used by us is surprisingly small. As stated above, none of the infants given S. M. A. or S. M. A.-skim milk developed rickets, and five out of the seven fed Protein S. M. A. were also protected. Whether the two that developed rickets temporarily on Protein S. M. A. would have avoided rickets had they been fed S. M. A. or S. M. A.-skim milk combinations it is impossible to say, although it is likely to be true, as both of the infants lost their rickets on the same diet and on the same intake of cod liver oil. If it is true, however, that a high protein intake and a resultant increase in metabolic rate and growth require an increase in the amount of antirachitic factor, then a mixture like Protein S. M. A. should have a somewhat increased cod liver oil percentage, but probably not necessarily as high as that of S. M. A.

A mistake which is regularly made and which, in our opinion, does great harm is that the administration of cod liver oil is begun too late. The doses employed usually are ample and in most instances are unnecessarily large. Wyman[6] says, "In my experience it has been impossible to give enough cod liver oil to prevent the earlier occurrence of rickets," and Garland[6] says, "Three teaspoons per day is not a large dose for a young infant and in premature cases it might well be supplemented with calcium and phosphorus." Hess[3] comes closest to our own figures, but in our opinion begins with the administration too late, advising 1 cc. daily at 1 month, and 6 at 3 months. For treating rickets he suggests that the dose be increased to 1 teaspoonful three times a day. Our data show what we have time and again experienced in the past; namely, that the average cod liver oil content of S. M. A. (3.5 cc. per liter) is sufficient to cure as well as to prevent rickets.

Exactly what the relationship of the needed amount of cod liver oil to prevent rickets is to the various factors that might be concerned in determining the speed and degree of rickets development we are unable to state at present. However, we are of the opinion that it is very small and we are making an attempt to gain some insight into this question from the data collected in this study.

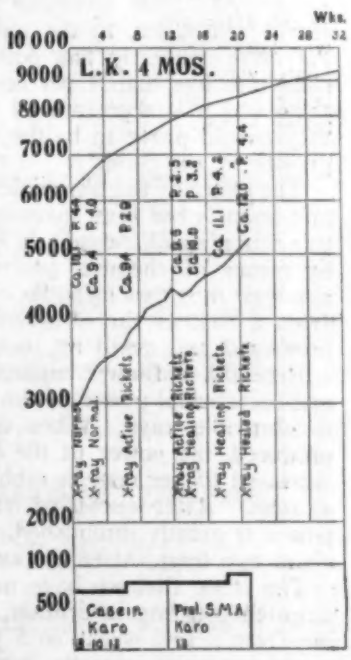

Fig. 18 (case 18).—Old premature and disturbed nutrition; sixteen weeks; weight, 2,900 Gm.; diet to eleventh hospital week, casein milk. Roentgen ray negative first week, positive seventh week (active). Diet changed to Protein S. M. A. in eleventh week. Roentgen ray still positive thirteenth week (active) but healing in fourteenth and healed in twenty-first week.

CONCLUSIONS

1. Rickets can be prevented and cured in premature infants.

2. The amount of cod liver oil required is small, as 3.5 cc. per liter of S. M. A. or S. M. A.-skim milk mixtures prevented rickets in every case, and 2.2 cc. of cod liver oil per liter of Protein S. M. A. was effective in five out of seven. The two that developed rickets on this combination lost it on the same mixture even though they continued to gain in weight, but at a somewhat slower speed. The average daily intake of cod liver oil for the group was 1.76 cc.

17. McCollum, Simmonds, Becker and Shipley: J. Biol. Chem. 53: 293 (Aug.) 1922.

3. It was observed that a daily intake of 8 cc. of cod liver oil for one week produced healing rickets in seven weeks and a completely calcified bone in nine, showing again the small amount of cod liver oil required to initiate and for some time to keep in action the calcification process.

4. In preventing rickets in premature infants, cod liver oil should be administered as soon as food is consumed.

5. Excessively rapid and great gain in weight should not be encouraged.

6. The food should contain a higher mineral and protein content than does human milk, and it is suggested that if human milk is used it be supplemented with boiled skim milk.

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THE EFFECT OF ULTRAVIOLET IRRADIATION ON THE HEALTH OF A GROUP OF INFANTS*

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The importance of sunlight for the welfare of the infant and the growing child has only recently been recognized. The favorable effect is ascribed chiefly, if not altogether, to the ultraviolet or invisible rays. As Hess[1] recently has pointed out, these radiations constitute less than 1 per cent of the total solar spectrum and it is therefore all the more remarkable that they should prove to be the factor essential to normal growth of the child.

The effect of the ultraviolet rays in rickets in infants and animals has been investigated by many workers in this country and abroad. It has been shown objectively by means of chemical analysis of the blood and the roentgen rays that infantile rickets comes about largely from a lack of the ultraviolet solar rays and can be prevented and cured by such radiations.

Recently, Eidinow[2] reported an increase of the normal bactericidal power of the blood following exposure to ultraviolet rays. When only a mild erythema was produced, the power of the blood to kill bacteria was increased 65 per cent in rabbits and about 20 per cent in man. After excessive irradiation, the bactericidal power is greatly diminished, a reaction that is noticed about two hours after the exposure.

The study that we have made was carried out in a large child-caring institution, harboring children ranging from a few weeks to 5 years of age. Our experience for many years has been that during the summer months the morbidity is low, but that during the autumn, winter and early spring, the children suffer from respiratory infections partly because of a lack of sunlight, especially of the deprivation of its ultraviolet rays, which, as is generally known, are not transmitted by window glass. In the hope of overcoming this situation, which constitutes the greatest health problem in this and other similar institutions, now that intestinal disturbances have been successfully combatted, it seemed worth while to make a serious attempt to ascertain whether these infections could be obviated by means of systematic exposures of a group of infants to ultraviolet rays from an artificial source. For this purpose, the mercury vapor lamp was used, which emits ultraviolet radiations of exceptionally high intensity. The object was primarily to determine the value of these rays in the prevention of respiratory infections and secondly on the nutrition of the children. As it happened, the scope of the study was somewhat enlarged to include the value of this therapeutic agent in pertussis, varicella and adenitis. As far as we are aware, the nutritional effect of actinic rays in infants has as yet not been systematically studied.

About the middle of November, 1925, two wards were selected for this purpose, one occupied by infants largely under 1 year of age, and the other by children from 1 to 2½ years. The children of each ward were divided into two groups, the one to be irradiated and the other not to be irradiated, but to receive the usual amount of sunlight available during these seasons of the year. Before beginning our study, a careful physical examination of every child was carried out, which included a notation of its weight, height and percentage of hemoglobin. These observations were systematically and periodically noted during the course of the six months that comprised this investigation. To facilitate interpretation, the study was subdivided into five periods, three of irradiation, totaling four months, and two subsequent periods comprising two months. The entire study covered therefore a span of six months, from November to May (tables 1 and 2).

The children in the various groups have been inmates of the home since early infancy, so that previous data relating to their health was readily available. Another decided advantage over studies conducted in an outpatient department is that we could be certain that the diet was adequate and uniform and that the general care was of the best. All the children received liberal amounts of orange juice and cod liver oil daily. Thus the possibility of a vitamin deficiency was eliminated as a factor in lowering resistance.

The technic consisted in irradiating for short periods at the outset and gradually augmenting the intensities in order to bring about increasing tolerance of the skin. The children were nude except for a mask worn to protect their eyes. The initial irradiations were of three minutes' duration, alternating on the dorsal and ventral surfaces. At all times treatment was given only on alternating days, as it was considered that this is preferable to daily exposures. Later, front and back were irradiated at the same session; the maximum irradiation, which was reached about the middle of February, was fifteen minutes' exposure to the front and an equal period to the back. Up to this time, the lamp was placed at a distance of 36 inches from the table; subsequently this distance was changed to 30 inches in order to increase the intensity.

There can be no question that the infants received a sufficient degree of irradiation when we consider that the younger children were irradiated for a total of eleven hours at a distance of 3 feet, and in addition for a period of almost five hours at a distance of 30 inches. Any failure in achievement cannot be ascribed to insufficient treatment. The same is true in regard to the older children, who were irradiated approximately with the same intensity. The only exception in the procedure was in the case of several children who developed pertussis and for this reason

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* From the Home for Hebrew Infants.

1. Hess, A. F.: The Ultraviolet Rays of the Sun, J. A. M. A. 84: 1033-1037 (April 4) 1925.

2. Eidinow. Brit. J. Radiol. 31: 35 (Jan.) 1926.

TABLE 1.—*Clinical Data of Infants Treated for a Period of Months with Ultraviolet Rays*

	Prior to Irradiation				Periods of Irradiations: 0 to 1 Month						1 to 2½ Months						2½ to 4 Months						Subsequent to Irradiation: 4 to 5 Months					5 to 6 Months				
Case No.	Age, Mo.	Wt., Lb.	Ht., In.	Hb. %	Age	Wt.,	Ht.	Hb. %	Infections	Exposure, Min.	Age	Wt.	Ht.	Hb. %	Infections	Exposure, Min.	Age	Wt.	Ht.	Hb. %	Infection	Exposure, Min.	Age	Wt.	Ht.	Hb. %	Infection	Age	Wt.	Ht.	Hb. %	Infection
Ward 1																																
1	4	11¼	24.6	90	5	13	25.2	85	—	81	6½	14¾	26.2	95	+	403	8	15¼	27.2	88	+*	178 and 284†	9	16½	27.6	85	—	10	17	28.1	89	+
2	7	17½	27.4	62	8	19¾	27.8	61	+	81	9½	20¼	27.8	53	+	403	11	21⅜	30	53	+	178 and 284†	12	22½	30	51	—	13	22¾	31	53	—
3	5	14½	26	61	6	16½	26	78	—	81	7½	17⅜	27	75	—	403	9	18¾	28	64	+	178 and 284†	10	20	28.2	50	+	11	20½	29	52	—
4	7	20¼	29.8	66	8	20½	30	62	—	81	9½	20¼	30.5	77	—	403	11	20¼	30.6	81	—	118	12	21¾	31.1	80	—	13	21¼	31.1	95	—
5	6	17¼	26.8	105	7	17½	....	95	—	81	8½	‡	27.2	80	+*	351	10	18¾	27.9	89	—	.....	11	20½	28.8	89	+	12	21½	29.1	86	+
6	3	11¼	25.1	105	4	13½	....	91	—	81	5½	12¾	26	92	+	351	7	13	26.5	95	+*	.....	8	14½	27	98	—	9	15¼	27.9	80	—
7	8½	22	28.3	75	9½	21¾	28.3	66	—	81	11	23	28.5	47	—	403	12½	23¼	29.6	50	+	178 and 284†	13½	23¼	30.5	65	+	14½	24	30.5	62	—
8	6	16¼	27	72	7	18	27.5	53	—	81	8½	19¼	28.2	60	+*	403	10	19½	29	58	+*	178 and 284†	11	20	29	76	—	12	20½	30	82	—
9	8	20¼	28.5	77	9	22	28.6	65	+	81	10½	23¾	28.6	60	+	403	12	24¾	30.1	62	+*	178 and 284†	13	25½	31.1	70	—	14	25½	31.1	76	+
10	9	17½	27.3	48	10	18½	27.5	45	+	81	11½	19	28.5	41	—	403	13	19¾	28.8	50	+*	178 and 284†										
11	6	15	26.1	75	7	15¼	26.2	70	+	81	8½	16¾	27.2	75	+	403	10	17¾	27.8	75	+	178 and 284†	11	19	28.6	71	+	12	20	29	72	—
12	7½	18¾	28	82	8½	21½	28.4	87	+	81	10	22½	29.5	75	—	403	11½	23	30.2	80	+*	178 and 284†	12½	24¾	30.5	90	—	13½	22	30.6	67	+*
Ward 8																																
1	25	24½	32.2	87	26	25¼	32.2	82	—	91	27½	25½	33.2	70	+	378	29	25¼	33.6	83	+*	204	30	26½	33.6	75	—	31	28	33.7	82	—
2	27	27¼	32.5	75	28	27½	33.5	85	+	91	29½	26½	34.2	78	+	378	31	‡	34.5	88	—	204 and 52†	32	‡	34.5	78	—	33	‡	34.6	79	—
3	17	25¾	31	87	18	25¼	32.4	87	+	91	19½	25¼	32.4	94	+	378	21	24½	32.6	71	—	204 and 292†	22	‡	33.2	81	—	23	‡	33.2	81	+
4	20	24¼	31	87	21	23½	32.4	81	—	91	22½	24¼	32.4	78	+	378	24	‡	32.8	90	—	204 and 52 †	25	‡	32.8	92	+	26	25¼	33.1	82	—
5	12	20¾	29.2	80	13	20¾	29.5	85	+	91	14½	21	30.2	77	+	378	16	21½	30.8	65	+	204 and 292†	17	22¼	31.2	72	+	18	‡	31.5	74	+
6	19	21¾	29.2	75	20	23	30.2	80	—	91	21½	23½	31.2	73	—	378	23	23½	31.2	75	—	204 and 292†	24	24¾	32.1	73	—	25	‡	32.2	83	—
7	21	27¾	32.5	82	22	27½	33	90	—	91	23½	28¾	33	90	—	378	25	‡	33	93	—	204 and 52†	26	‡	33.1	96	—	27	29	33.7	92	—
8	25	26¼	31.5	85	26	26	32.2	84	—	91	27½	25¼	32.2	72	—	378	29	26	32.5	78	+	204 and 292†	30	27½	32.5	89	—	31	27¾	33	89	—
9	23	24½	31	74	23	25	32	77	—	91	24½	25	32.9	88	—	378	26	25½	33.2	73	—	204 and 292†	27	26¼	33.2	82	—	28	26	33.8	89	+

* Multiple respiratory infections.
† Distance of lamp to the table was 30 inches, during the last month of irradiation; prior to this time it was 36 inches.
‡ Children isolated for pertussis were not weighed.

TABLE 2.—*Clinical Data of Infants Not Treated with Ultraviolet Rays*

	Prior to Irradiation				Period of Irradiation: 0 to 1 Month					1 to 2½ Months					2½ to 4 Months					Subsequent to Irradiation: 4 to 5 Months					5 to 6 Months				
Case No.	Age, Mo.	Wt., Lb.	Ht., In.	Hb., %	Age	Wt.	Ht.	Hb., %	Infection	Age	Wt.	Ht.	Hb. %	Infection	Age	Wt.	Ht.*	Hb. %	Infection	Age	Wt.	Ht.	Hb. %	Infection	Age	Wt.	Ht.	Hb. %	Infection
Ward 1																												
1	9	23	30.2	75	10	24	30.2	65	—	11½	24½	31.5	67	—	13	24½	32.1	60	+*	14	24¾	32.3	74	—	15	24¾	32.8	65	+
2	10	13¼	26.4	63	11	13½	26.5	..	+	12½	15	26.6	92†	+	14	15¼	28	80	+*	15	15¾	29	91	—	16	15	29.5	68	+
3	15	15¼	26.7	60	16	17½	27.2	51	+*	17½	19¼	28	70	+	19	20	28.7	68	+*	20	22½	29.5	63	—	21	24	30.2	69	—
4	5½	12	24.4	80	6½	13¾	25.8	85	+	8	14½	26.4	83	+	9½	15	27.1	85	+	10½	16	27.8	84	—	11½	17	28.8	92	—
5	10½	22½	29.7	78	11½	24	30	70	—	13	24	31.5	49	—	14½	24	21.5	55	—	15½	24¾	32	68	—	16½	24¾	32	78	—
6	13	21	30.1	73	14	21¾	30.2	70	—	15½	22	31.2	47	—	17	22¾	31.5	45	+*	18	23¾	32.5	68	+	19	23¼	32.5	78	—
7	9	21	28.2	89	10	22	28.2	87	—	11½	22½	28.2	94	—	13	23½	28.5	84	+	14	23¾	29.2	82	+	15	23	29.2	94	—
8	10	21	29.5	80	11	19¼	30	89	+	12½	20	31	68	—	14	21½	31.5	84	+	15	21½	31.6	94	—	16	21¾	31.6	85	—
9	12½	23	30.1	68	13½	23	30.5	70	+	15	22¼	40.8	78	—	16½	21½	30.8	71	—	17½	21½	31.4	68	—	18½	‡	31.4	75	—
10	12½	19½	29.8	68	13½	20	29.8	64	+*	15	20	30	69	—	16½	20	30.3	65	+*	17½	21¼	31.6	72	—	18½	21½	31.7	82	—
11	14	21½	30.6	77	15	22¾	30.6	81	—	16½	23	31	85	—	18	22½	31.4	84	+	19	22	32.3	93	—	20	23	32.4	93	—
Ward 8																												
1	30	25	33.5	88	31	25	33.5	100	—	32½	24¾	33.7	90	—	34	25	34.6	85	+	35	‡	34.6	88	—	36	‡	34.8	88	—
2	22	22	30.2	77	23	23½	30.8	94	—	24½	24	31.4	75	—	26	24	31.8	77	+	27	25¾	31.8	72	—	28	26½	32	84	—
3	27	24½	31.5	100	28	24½	32.4	88	—	29½	25	32.6	98	—	31	24¼	33.9	95	+	32	26¼	33.9	98	—	33	26¼	34	98	—
4	20	29½	32	80	21	29¼	33	83	—	22½	30	33.7	86	—	24	29½	34.5	88	+	25	31¼	34.5	88	—	26	34	34.5	96	—
5	16	21½	30	79	17	20½	30	100	—	18½	20¾	30.5	93	—	20	21	31.5	90	—	21	21	31.9	91	—	22	21¾	32	80	—
6	22	27¾	32.8	83	23	26	32.8	95	—	24½	26	33.2	93	—	26	....	34	75	+	27	‡	34	85	—	28	27½	34.1	92	—
7	26	23½	32.3	91	27	22¾	32.5	98	—	28½	23½	33.1	80	—	30	....	33.9	85	+	31	‡	33.9	95	—	32	‡	33.9	90	—
8	30	28½	35.2	85	27	28½	35.2	90	—	28½	29¼	35.9	93	—	30	....	35.9	90	—	31	‡	35.9	85	—	32	28½	37.2	75	+*

* Multiple respiratory infections.
† Child was transfused several days prior to estimation of hemoglobin.
‡ Children isolated for pertussis were not weighed.

had to be placed under quarantine to prevent the spread of infection.

In considering the dosage of ultraviolet irradiation, it should be mentioned that at present all conceptions on this subject are entirely empiric and based on no accurate or scientific knowledge. No one can state, even with approximate accuracy, the correct dose of irradiation, either for the prevention or cure of rickets or for a general nutritional effect. It is our belief that at the present time ultraviolet irradiation is given in excess rather than in too small degree, and that it will be found that exposures of lesser intensity accomplish the same result and perhaps are of decided advantage.

The study of our data, especially in regard to the weight and the general nutrition of the children, gives support to this point of view. For example, during the first month of irradiation, when the total exposure had been only eighty-one minutes, the children, both small and large, increased in weight to a greater extent than the corresponding group which had not been irradiated (table 3). It would seem that there is an initial stimulation from the irradiation which reaches its maximum at about this time. During the subsequent months the gains were less, in both of the irradiated groups. Whereas infection no doubt played a rôle in these months, it did not confuse the comparative picture during the first month of the study.

In regard to growth as indicated by increase in height, it is difficult to express a definite opinion. The variations among individuals, as the result of hereditary and other factors, are so great that large numbers of observations are necessary in order to make the conclusions of value. It can be stated, however, that in the small series of children which we followed (table 6) no superiority in this respect was brought about by several months of irradiation.

As stated, one of the many benefits that we hoped to derive from this ultraviolet therapy was a diminution of the frequent infections to which all children are prone throughout the winter months. A glance at the accompanying tables shows the failure of our efforts. Despite irradiation, the number of infections increased after November, as is customary at this season of the year. In fact, it will be seen in table 4 that the irradiated children in the ward comprising the younger infants developed a greater number of infections during the second period than the children who were not irradiated; the same is true for the older children in regard to the first and second periods. Had the result been the reverse, we might well have ascribed the benefit to the action of irradiation. The infections involved almost entirely the respiratory tract. It is evident that we cannot hope to eradicate this menace by means of ultraviolet ray therapy.

The estimations of hemoglobin that are recorded in table 5 indicate that the fluctuations are more marked and that the average percentage is lower in young than in older infants. In the former group the hemoglobin remained stationary among those who were not irradiated, but even decreased in those who were exposed to the rays of the mercury vapor lamp. In the older children we note a similar result, the percentages of hemoglobin being less favorably affected in those of the irradiated group rather than in the nonirradiated. With the advent of spring and warmer weather and the absence of infection, which always accompanies

Table 3.—*Effect of Irradiation on Growth in Weight (Average)*

Number of Children		Previous to Irradiation		Period of Irradiation						Subsequent to Irradiation			
				0 to 1 Month		1 to 2½ Months		2½ to 4 Months		4 to 5 Months		5 to 6 Months	
		Age, Mo.	Weight, Lb.	Weight, Lb.	Gain, Oz.	Weight, Lb.	Gain, Oz.	Weight, Lb.	Gain, Oz.	Weight, Lb.	Gain, Oz.	Weight, Lb.	Gain, Oz.
	Ward 1												
12	Irradiated	6½	16¾	18¼	22	19	15	19¾	9	20¾	16	21	4
11	Nonirradiated	11	19½	20	12	20½	8	21	6	21½	10	21¾	3
	Ward 8												
9	Irradiated	21	24¾	25	2	25	1	24½	—8	25½	16	27¼	28
8	Nonirradiated	23½	25	25	0	25½	4	24¾	—10	26	22	27½	22

Table 4.—*Incidence of Respiratory Infection*

Number of Children		Period of Irradiation			Subsequent to Irradiation	
		0 to 1 Month	1 to 2½ Months	2½ to 4 Months	4 to 5 Months	5 to 6 Months
	Ward 1					
12	Irradiated	5	9	16	4	5
11	Nonirradiated	8	3	14	2	2
	Ward 8					
9	Irradiated	3	5	4	2	3
8	Nonirradiated	0	0	6	0	3

Table 5.—*Effect of Irradiation on Hemoglobin (Average Percentage)*

Number of Children		Previous to Irradiation	Period of Irradiation			Subsequent to Irradiation	
			0 to 1 Month	1 to 2½ Months	2½ to 4 Months	4 to 5 Months	5 to 6 Months
	Ward 1						
12	Irradiated	75	71	69	68	75	74
11	Nonirradiated	67+	66+	67+	66+	78	80
	Ward 8						
9	Irradiated	81	83	80	78+	82	83+
8	Nonirradiated	86+	92	88+	85	88	89

Table 6.—*Effect of Irradiation on Growth in Height (Average)*

Number of Children		Previous to Irradiation		Period of Irradiation						Subsequent to Irradiation			
				0 to 1 Month		1 to 2½ Months		2½ to 4 Months		4 to 5 Months		5 to 6 Months	
		Age, Mo.	Height, Inches	Height, Inches	Growth, Inches	Height, Inches	Growth, Inches	Height, Inches	Growth, Inches	Height, Inches	Growth, Inches	Height, Inches	Growth, Inches
	Ward 1												
12	Irradiated	6½	27.1	27.5	0.4	27.9	0.4	28.8	0.9	29.3	0.5	29.8	0.5
11	Nonirradiated	11	28.7	29	0.3	29.7	0.7	30.1	0.4	30.8	0.7	31.1	0.3
	Ward 8												
9	Irradiated	21	31.1	31.9	0.8	32.4	0.5	32.7	0.3	32.9	0.2	33.2	0.3
8	Nonirradiated	23½	32.2	32.5	0.3	33	0.5	33.8	0.8	33.8	0	34.1	0.3

this season of the year, the hemoglobin of all the children, younger and older, showed a definite increase, which is to be ascribed probably more to a lack of infection than to a change in metabolism.

As stated, owing to the outbreak of pertussis after the irradiation had been started, an opportunity was afforded for the study of its prophylactic and curative value. Gettinger [3] recently reported his experience with the mercury vapor lamp in twelve children suffering from pertussis. His results were uniformly more favorable with irradiation than with any other form of therapy. Marked improvement was noted after the first few exposures, in regard both to vomiting and to the intensity of the paroxysms. The incidence of pertussis in both of our wards during the period of irradiation, as indicated in table 7, shows that the irradiation had little or no effect. Four children in one ward and three in another developed pertussis in spite of having been irradiated for several months prior to the onset of pertussis. Had irradiation any prophylactic value, it should have been manifested after three months of exposure. No curative effect was observed in regard either to the severity or to the duration of the disease.

TABLE 7.—*Incidence of Pertussis*

Number of Children		Period of Irradiation		
		0 to 1 Month	1 to 2½ Months	2½ to 4 Months
	Ward 1			
12	Irradiated	2	1	1
11	Nonirradiated	4	1	2
	Ward 8			
9	Irradiated	0	0	3
8	Nonirradiated	0	0	3

A coincidental outbreak of varicella occurred during the period of irradiation. Twelve of the irradiated and fourteen of the nonirradiated children developed varicella. The eruption of the former group was more intense than that of the latter.

It was of interest to note the effect of the rays on the skin. Instead of the reddish tan observed after exposure to the sun, the skin became muddy brown, a tint that persisted for about a month after irradiation. The turgor of the muscles was greatly improved; comparing the tonicity of the muscles of the poorest of the irradiated group with that of our best nourished infants, the superiority of the former in this respect was unquestionable. To judge from the texture of the skin and the firmness of the muscles, one might readily have mistaken them for breast fed infants.

During our preliminary examination, the liver, spleen or both were found to be enlarged in several of the infants. It was of interest to ascertain whether ultraviolet irradiation influenced the size of these organs, especially in view of the fact that the roentgen rays have been found to diminish the size of glandular and lymphoid organs, such as the tonsil and the spleen. Subsequent examinations showed that these organs either remained uninfluenced or were variable in size, being palpable at one time and not felt at another. Several infants who evinced no enlargement of these organs prior to irradiation were found to have a palpable spleen or liver at one or more of the subsequent examinations. This variability probably depended on the presence or absence of infection quite irrespective of irradiation.

3. Gettinger, J. H.: Actinotherapy in Pediatrics, Arch. Pediat. **18**: 251 (April) 1926.

CONCLUSION

Irradiation of infants with the mercury vapor lamp was found to be associated with an initial increase in weight. This did not continue during the subsequent months. Irradiation did not lessen the number of infections during the winter. During the spring, however, there was a definite decrease in infection. Ultraviolet rays did not protect against or mitigate pertussis. The hemoglobin was not increased by irradiation, but its percentage rose with the advent of spring and the diminution of infections. Irradiation improved the texture of the skin and the turgor of the muscles. The pigmentation brought about by the mercury vapor lamp differed somewhat in hue from that which followed heliotherapy.

1749 Grand Concourse.

THE LOCALIZATION IN ANIMALS OF BACTERIA ISOLATED FROM FOCI OF INFECTION *

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The rôle of bacteria, as found in various foci of infection, is extremely important. Although bacteria rarely enter the blood stream under normal conditions, they do harbor and thrive in various crypts, pockets or secluded spots in which there is imperfect drainage and which are therefore called foci. Occasionally, when conditions are suitable, the bacteria acquire enough virulence to invade other regions and then cause disease. Most observers who consider adequately all the facts agree that the bacteria as found in the various foci at times influence other parts of the same body in which they live. This view was voiced by Rush,[1] in 1801, who said, "I have been made happy by discovering that I have only added to the observations of other physicians, in pointing out a connection between the extracting of decayed and diseased teeth and the cure of general disease."

Billings [2] has given us the concrete conception of focal infection and has emphasized its importance in arthritis, endocarditis and nephritis. Rosenow,[3] in a long series of experiments, has emphasized the importance of the elective localizing power of bacteria as a cause of various diseases, and has produced lesions repeatedly in animals which correspond to the various lesions of man. Rosenow and Meisser [4] have produced

* From the Division of Experimental Bacteriology, the Mayo Foundation.

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1. Rush, quoted by Duke, W. W.: Oral Sepsis in Its Relation to Systemic Disease, St. Louis, C. V. Mosby Company, 1918.

2. Billings, Frank: Chronic Infectious Endocarditis, Arch. Int. Med. **4**: 409-431 (Oct.) 1909; Chronic Focal Infections and Their Etiologic Relations to Arthritis and Nephritis, ibid. **9**: 484-498 (March) 1912; Chronic Focal Infection as a Causative Factor in Chronic Arthritis, J. A. M. A. **61**: 819-822 (Sept. 13) 1913; Focal Infection: Its Broader Application in the Etiology of General Disease, ibid. **63**: 899-903 (Sept. 12) 1914.

3. Rosenow, E. C.: Elective Localization of Streptococci, J. A. M. A. **65**: 1687-1691 (Nov. 13) 1915; Iritis and Other Ocular Lesions on Intravenous Injection of Streptococci, J. Infect. Dis. **17**: 403-408, 1915; The Causation of Gastric and Duodenal Ulcer by Streptococci, ibid. **19**: 333-384 (Sept.) 1916; The Relation of Dental Infection to Systemic Disease, Dental Cosmos **59**: 485-491, 1917; Studies in Elective Localization: Focal Infection with Special Reference to Oral Sepsis, J. Dental Research **1**: 205-267, 1919; The Specificity of the Streptococcus of Gastroduodenal Ulcer and Certain Factors Determining Its Localization, J. Infect. Dis. **33**: 248-268 (Sept.) 1923; Experimental Studies Indicating an Infectious Etiology of Spasmodic Torticollis, J. Nerv. & Ment. Dis. **59**: 1-30, 1924.

4. Rosenow, E. C., and Meisser, J. G.: The Production of Urinary Calculi by the Devitalization and Infection of Teeth in Dogs with Streptococci from Cases of Nephrolithiasis, Arch. Int. Med. **31**: 807-829 (June) 1923.

nephrolithiasis, and Meisser,[5] ulcer of the stomach in dogs by the production of chronic foci in the teeth. Nakamura[6] has produced ulcer of the stomach and arthritis with tonsil cultures from patients having ulcer and arthritis, respectively, and Moench[7] has shown the relation of chronic endocervicitis to chronic arthritis. Haden[8] and Haden and Bohan[9] have made several reports on the etiologic relationship of the streptococci to ulcer of the stomach, arthritis, nephritis and other conditions of a focal origin. Evans, at the meeting of the Society of American Bacteriologists, in December, 1925, corroborated the work of Rosenow by demonstrating the etiologic relationship of the streptococcus to epidemic encephalitis, and recently a symposium on ulcer of the stomach has appeared in a French magazine, which again confirms Rosenow's theory that the ulcer is an infectious disease. In support of their contentions, these writers illustrate lesions containing definite streptococci. Clinically, there are also many published and unpublished records demonstrating apparent relationship between a focus and a systemic disease, since the disease disappeared with the removal of the focus. Lillie and Lyons[10] found that in 79 per cent of 200 cases of myositis and arthritis following tonsillectomy there was marked improvement. Likewise in case of interstitial keratitis, recovery may occur after tonsillectomy or extraction of infected teeth, whereas before removal of the foci no medication was effective.

Thus it is shown that there is a voluminous amount of experimental work in various fields which corroborates the idea of elective localization. There are, however, many reports of unsatisfactory experimental work, in many instances due to failure in technic or the use of cultures that have been pigeonholed for a week or more. It is with the hope of adding something of corroborative value to the experimental work on elective localization that I report here on some of my experiments in the last eighteen months with four of the more important foci: the tooth, the tonsil, the prostate and the cervix.

TABLE 1.—*Localization of Bacteria from Various Foci of Infection*

Routine Cultures From Patients	Source of Culture	Number of Cultures	Number of Animals	Percentage of Animals Having Lesions of the: Joint	Heart	Muscle	Eye	Skin	Stomach, Duodenum	Kidney	Gall-bladder	Liver	Lung
Arthritis, 138 cases...	Tonsil.....	90	125	50	..	..	..	..	..	..	..	..	..
	Teeth.....	21	56	60	..	..	..	..	..	..	..	..	..
	Prostate.....	10	110	55	..	..	..	..	..	..	..	..	..
	Cervix.....	15	37	35	..	..	..	..	..	..	..	..	..
	Total.....	140	328	51	3	3	1	..	5	2	2	3	2
Myocarditis and endocarditis, 11 cases	Tonsil.....	5	14	..	28	..	..	..	..	..	..	..	..
	Teeth.....	2	14	..	50	..	..	..	..	..	..	..	..
	Prostate.....	6	11	..	27	..	..	..	..	..	..	..	..
	Total.....	13	39	15	39	5	3	..	..	5	3	5	10
Myositis, 12 cases....	Tonsil.....	8	20	..	..	..	..	..	..	..	..	..	..
	Teeth.....	2	4	..	..	..	..	..	..	..	..	..	..
	Prostate.....	1	2	..	..	..	..	..	..	..	..	..	..
	Cervix.....	1	2	..	..	..	..	..	..	..	..	..	..
	Total.....	12	28	11	4	38	..	..	..	7	4	4	4
Lesions of the eye, 38 cases	Tonsil.....	6	18	..	..	..	28	..	..	..	..	..	..
	Teeth.....	10	32	..	..	..	41	..	..	..	..	..	..
	Prostate.....	16	45	..	..	..	29	..	..	..	..	..	..
	Cervix.....	6	16	..	..	..	31	..	..	..	..	..	..
	Total.....	38	113	4	2	2	34	..	1	3	1	..	..
Lesions of the skin, 8 cases	Tonsil.....	1	2	..	..	..	..	..	..	..	..	..	..
	Teeth.....	1	2	..	..	..	..	..	..	..	..	..	..
	Prostate.....	3	8	..	..	..	..	..	..	..	..	..	..
	Total.....	5	12	8	8	8	..	36	..	8	..	8	8
Ulcer of stomach and duodenum, 61 cases	Tonsil.....	27	58	..	..	..	..	..	22	..	..	..	..
	Teeth.....	38	103	..	..	..	..	..	44	..	..	..	..
	Prostate.....	12	29	..	..	..	..	..	41	..	..	..	..
	Total.....	77	190	6	3	4	1	1	40	1	1	..	6
Vague pains et al., 64 cases (control group)	Tonsil.....	23	49	..	..	..	..	..	..	..	..	..	..
	Teeth.....	10	22	..	..	..	..	..	..	..	..	..	..
	Prostate.....	41	89	..	..	..	..	..	..	..	..	..	..
	Cervix.....	5	20	..	..	..	..	..	..	..	..	..	..
	Total.....	79	181	7	3	5	1	..	3	5	3	2	7
Average percentage exclusive of the "specific" strains.....				7	3	4	1	1	3	3	2	2	5

TECHNIC

The method of obtaining the culture for animal experimentation varied with the focus. If the focus was a tooth, the area of operation was first swabbed with iodine or 10 per cent mercurochrome-220 soluble and then blocked off with sterile gauze. The tooth was extracted with sterile forceps and the apical one-fourth nipped off with sterile nippers and placed directly into small tubes containing Locke's solution and sand. This tube was then shaken, as first recommended by Haden, for from ten to fifteen minutes, and cultures were made. If the focus was the tonsil, a culture was obtained by inserting a small laryngeal mirror (with the mirror straightened somewhat so as to lack about 15 degrees of being in a straight line with the handle) between the tonsil and the anterior pillar and applying

5. Meisser, J. G.: Further Studies on Elective Localization of Bacteria from Infected Teeth, J. A. Dental A. **12**: 554-565, 1925.
6. Nakamura, T.: A Study on Focal Infection and Elective Localization in Ulcer of the Stomach and in Arthritis, Ann. Surg. **79**: 29-43 (Jan.) 1924.
7. Moench, Laura M.: The Relationship of Chronic Endocervicitis to Focal Infection with Special Reference to Chronic Arthritis, J. Lab. & Clin. Med. **9**: 289-309 (Feb.) 1924.
8. Haden, R. L.: The Elective Localization of Bacteria in Peptic Ulcer, Arch. Int. Med. **35**: 457-471 (April) 1925.
9. Haden, R. L., and Bohan, P. T.: Focal Infection in Peptic Ulcer, J. A. M. A. **84**: 409-413 (Feb. 7) 1925.
10. Lillie, H. I., and Lyons, H. R.: Tonsillectomy in Myositis and Arthritis, J. A. M. A. **72**: 1214-1216 (April 16) 1919.

pressure back and inward toward the base of the tonsil. After a few seconds of such pressure, necrotic material and pus oozed out of the crypts and was scooped up with the edge of the laryngeal mirror. It was then transferred from the mirror to a swab, which was inserted into a tube of gelatin Locke solution and taken in this form to the laboratory for culture. If the focus was the prostate, the glans was washed after urination with soap and water and then with sterile sodium chloride solution. The bladder and the posterior and the anterior urethra were copiously irrigated with sodium chloride solution. The patient was then massaged and the expressed material caught directly into tubes of gelatin Locke solution for culture. If the focus was the cervix, a sterile speculum was inserted and swabbing from the external os and surrounding tissue was run as a control. A second swabbing from the cervical canal was transferred to gelatin Locke solution for inoculation.

All cultures were plated aerobically on blood-agar plates and inoculated into glucose-brain-agar and glucose-brain-broth, with or without a top layer of petrolatum, according to the nature of the case. This medium was made according to Rosenow's method. In all the experiments the animals were inoculated intravenously in the marginal vein of the ear with cultures approximately from 18 to 24 hours old, and with dosages varying from 2 to 12 cc., depending on the size of the rabbit. This injection was sometimes repeated once or twice, depending on the nature of the case. The animals were allowed to live for weeks unless they gave evidence of recovery. The average length of life was two weeks and in a few cases fourteen months. The lesion is therefore not the result of lethal intoxication but may fairly be considered the specific result of the injected micro-organism acting on the elected tissue. The injection into an animal of bacteria from a focus may thus be considered identical with the spontaneous release of organisms from the focus into the circulation in man. The determination of the elective potentiality is the crux of the argument. Consequently, the animals developed lesions, probably not as multiple or as frequent but more often of one kind only, and thus more analogous to the lesions of the patient because of the selective affinity of the microbe.

RESULTS OF EXPERIMENTS

The results in animals injected with all routine cultures are grouped according to diagnosis in table 1. In some cases the localizing power of bacteria from more than one focus in the same patient was determined. With the 149 cultures from cases of arthritis, 328 rabbits were injected. Arthritis of one or more joints was obtained with cultures from the tonsils in 50 per cent, from the teeth in 60 per cent, from the prostate in 35 per cent, and from the cervix in 35 per cent, an average of 51 per cent of all the animals injected. Simultaneously, there were lesions of the heart, muscle and liver in 3 per cent of the animals, of the eye in 1 per cent, of the lung, gallbladder and kidney in 2 per cent, and of the stomach and duodenum in 5 per cent. Arthritis occurred in 18 per cent of the cases of myocarditis and in 11 per cent of the cases of myositis, diseases that are often associated with arthritis, in contrast to 7 per cent of the control group.

Similarly, a relatively high incidence of specific localization occurred in each of the groups studied. Thus, in eleven cases of myocarditis and endocarditis, lesions of the heart occurred in 39 per cent of the animals injected, in contrast to 3 per cent of the control animals. In twelve cases of myositis, lesions of the muscles occurred in 38 per cent of the animals, as contrasted with 5 per cent in the control animals. In thirty-six cases of diseases of the eye, 34 per cent of the animals had lesions of the eye, as contrasted with 1 per cent in the control animals. In eight cases of lesions of the skin, 36 per cent of the animals had lesions, in contrast to 1 per cent of the control animals, and in sixty-one cases of peptic and duodenal ulcer 40 per cent of the animals developed lesions of the stomach or duodenum, in contrast to 3 per cent of the control animals.

In some cases, the culture was taken and animal inoculation made at a time far removed from an exacerbation, or taken from a questionable focus. Consequently, from all the routine cultures, only those from clear cut cases with likely foci were tabulated in table 2 and contrasted with the results of all the routine cultures summarized in table 1. The incidence of specific localization as is shown was much higher in the selected cases of each of the groups studied.

ARTHRITIS

In view of the wide difference of opinion concerning the etiology of chronic arthritis, especially ostearthritis, the animals were permitted to live for a considerable length of time after the injection, as previously mentioned, in order that sufficient time might elapse for bone changes to develop parallel to the patient's condition.

TABLE 2.—*Comparison of Results in Animals Injected with Cultures from Routine and Selected Cases*

	Selected Cases	Animals Injected	Positive Animals	Percentage of Animals Showing Specific Localization: Selected Cases	Control Cases	Routine Cases
Arthritis	82	220	173	77	7	51
Myocarditis	9	29	18	62	3	39
Myositis	10	23	16	69	4	38
Eye	11	24	18	75	1	34
Skin	4	8	4	50	1	36
Ulcer	39	116	80	68	3	40

In a series of eighty-two cases, 220 rabbits were injected, and there was localization in joints in 77 per cent, as contrasted with 7 per cent in rabbits injected with cultures from indefinite cases, and as contrasted with 7 per cent in rabbits injected with strains from patients having a definite diagnosis of a complaint other than arthritis (table 2). Two cases illustrative of the arthritis group are recorded.

CASE 1.—*History.*—A woman, aged 52, who came to the Mayo Clinic because of pain and swelling of most of the joints of the fingers and wrists, of two years' duration, had had high blood pressure, recurrent attacks of tonsillitis and a little swelling of the distal joint of the left index finger for many years.

Besides the enlarged joints of the fingers and wrists and the somewhat impaired flexion of the parts, the patient had also a slight cough and pain in the chest on exertion. The urine was normal; the blood Wassermann reaction was negative; the erythrocytes numbered 3,850,000, and the leukocytes, 6,400. The phenolsulphonphthalein return was 60 per cent. The systolic blood pressure was 210, the diastolic 110. Fluid pus was expressed from both tonsils, and a tooth was periapically infected.

Animal Experiments.—Two rabbits were injected with cultures of the pus expressed from the tonsil (strain 59). One rabbit was injected intravenously on three successive days beginning June 2, 1925, with 7, 10 and 12 cc., respectively, of eighteen and twenty-four hour glucose-brain-broth cultures of

the pus from the tonsil. Four days after the last injection, the right knee was slightly enlarged and warm. June 9, the right knee was aspirated and *Streptococcus viridans* in pure culture obtained. The rabbit died, June 11, and at necropsy the tissues around the right knee were markedly hyperemic, and the joint was distended with seropurulent material. Cultures from the knee again revealed a pure culture of *Streptococcus viridans*, but the culture of the blood was negative. The other rabbit (563) was injected similarly on the same three days with 10, 11 and 12 cc. The rabbit remained well for eighteen days, and then began to favor its left fore paw. However, not until four weeks after the first injection was there definite arthritis of the left fore paw as determined by palpation. This condition remained for about two weeks and then gradually subsided, but the joint remained somewhat enlarged, and exostosis could be felt on palpation.

October 1, after all signs of inflammation had disappeared, the first roentgenogram of the fore paw was taken, and 3 cc. of a pancreatic digest culture of strain 59.4 (recovered from rabbit 564 and kept in soft agar) injected.

October 8, 4 cc. of the culture was again injected, and four days later the rabbit again appeared to favor the left fore paw and also the left hind leg. Both joints became swollen, and *Streptococcus viridans* was recovered.

October 27, the rabbit was able to hop as well as ever.

November 20, another attempt was made to cause a flare-up of the joint by injection of 3 cc. of a culture, but the rabbit died within the next twenty-four hours. Necropsy did not reveal gross lesions except the enlarged joints. *Streptococcus viridans* was obtained from the two joints but not from the blood. Roentgenograms of the left fore paw revealed a definite lesion, which consisted essentially of loss of outline and shape of the carpal bones with calcium deposits on the various carpal bones, especially on the outer margins, and also to some extent on the adjacent portions of the ulna and radius.

Autogenous vaccine was given to the patient twice a week for about five months, apparently with some benefit.

Case 2.—*History.*—A man, aged 45, came to the Mayo Clinic on several occasions complaining of pains in the various joints, which had appeared first in the right knee in October, 1919. During the following winter, the tonsils and infected teeth had been removed, and the pain and stiffness disappeared from the knee.

In July, 1924, the right foot became very painful, and the right knee joint was distended by fluid. Aspiration afforded some relief.

In December, the ankles became painful; in February, 1925, the left knee became affected; in June, the cervical and lower lumbar spine, and in July the right foot. The patient was then confined to bed.

On examination the joints were painful, but there were practically no limitation of motion and no changes in the bone. All tests for tuberculosis were negative. There was slight secondary anemia and achlorhydria. The systolic blood pressure was 136; the diastolic, 90. Roentgenograms of the teeth did not reveal infection. An upper left molar, however, was markedly discolored and had a huge filling but was vital on test. Because relief had been afforded previously by the extraction of diseased teeth, this suspicious tooth was extracted. Cultures made from the apex afforded a pure culture of *Streptococcus viridans*.

Animal Experiments.—Sept. 18, 1925, a rabbit (943) was injected with a glucose-brain-broth culture of the nasopharynx (strain 506). The animal became slightly arthritic in three days, and died from pneumonia on the fourth day. Another rabbit (942) was injected three times with 5 and 6 cc. of nasopharyngeal culture but remained normal.

October 2, it was reinjected with 10 cc. of a glucose-brain-broth culture of the apex of the tooth.

October 16, the animal favored his hind quarters, and, October 20, both knees were markedly swollen and warm.

November 10, he refused to hop and dragged his hind quarters.

December 2, the condition was the same; December 22, it was a little better, although the joints were still large and soft.

Jan. 8, 1926, the animal was lively and its joints much smaller; February 3, the joints were definitely smaller and almost normal and the animal hopped; February 25, roentgenograms of the joints were negative.

Another rabbit (941) was injected with 5 and 6 cc. of the culture from the tooth and had symptoms almost identical.

The patient was given autogenous vaccine and diathermy, and after five and one-half months of treatment he had gained 30 pounds (13.6 Kg.), felt well, and had practically no pain in the joints.

LESIONS OF THE SKIN

Many lesions of the skin are believed to be due to infection. The idea that they may be due to a distant focus of infection is relatively new, especially when the prostate or cervix is considered as a causative factor. Like lesions of the eye, lesions of the skin are difficult to reproduce in rabbits. However, four of eight rabbits injected intravenously with cultures from four promising cases developed hemorrhagic lesions of the skin. Two illustrative cases are presented.

Case 3.—*History.*—A man, aged 62, came to the Mayo Clinic, May 15, 1925, with "eczematoid dermatitis." In October, 1924, he had noticed a slight vesicular eruption on the dorsal surface of his left middle toe. In a month this had extended to the knees of both legs with redness, weeping and crusting.

Examination revealed an acute vesiculobullous eruption on the left foot, with residual weeping and crusting lesions on the legs and on the neck, with erythema and scaling. Examination of the urine and blood was essentially negative. The tonsils were graded 2; a dental root and a boggy nodular prostate were graded 4. The tonsils were removed but discarded through error; the root tip was extracted and cultures were taken, and the prostate was massaged and cultures were taken. A pure culture of slightly hemolytic streptococci was obtained from the prostate, and a culture of *Streptococcus viridans* from the root tip.

Animal Experiments.—Cultures from the root tip injected into animals did not affect them. One of two rabbits (324) injected with 10 cc. of the culture from the prostate (strain 230) was quiet the first day and acted a little stuporous. That evening he became worse and was found dead the next day. Necropsy revealed multiple petechial hemorrhages of the colon, kidneys and liver, with hemorrhages just beneath the superficial fascia of the left quadriceps femoris, and scattered hemorrhages of the skin in the region of the left thigh. Cultures of the urine, prostate and blood contained many slightly hemolytic streptococci.

Treatment of the patient's skin and prostate was instituted, and by June 10 he had improved enough to be dismissed from observation. In January, 1926, word was received that the eruption had entirely disappeared from the skin and he considered the cure "miraculous."

Case 4.—*History.*—A woman, aged 40, came to the Mayo Clinic, Aug. 28, 1924, because she had had severe attacks of inflammation or cellulitis of the legs for the last eighteen years. Her first pregnancy eighteen years previously had been complicated with uremia, nephritis and convulsions. Craniotomy was performed and sodium chloride solution injected into the veins. She subsequently developed peritonitis and phlebitis in the left leg. She was sick three months. Since that time she had had attacks, generally monthly and then interspersed with occasional intermissions of three or four months. These attacks were preceded by malaise for a few days and accompanied by violent chills, and fever of 104 F. The legs became swollen, and red blotches appeared on the skin and extended to the knees. The legs were very tender and painful and quite edematous. These attacks also came on after emotional upsets. The removal of the teeth two years before did not afford any noticeable relief.

At the time of examination, there was marked cellulitis and edema of the legs with redness of the skin resembling erysipelas. This extended upward from the toes almost to the knees. The veins of the leg contained hard nodules. The uterus contained a fibromyoma about 7.5 cm. in diameter. There was some prolapse, a rectocele, grade 2, and marked tenderness of the left side in the region of the broad ligament. The

hemoglobin was 61 per cent; the erythrocytes numbered 3,640,000; the blood Wassermann reaction was negative. There was a remaining root tip, and the tonsils were graded 2. A pelvic examination made just prior to the menstrual period revealed a reddened cervix. Cultures from swabbings of the cervix afforded a pure culture of *Streptococcus viridans*.

Animal Experiments.—Aug. 30, 1924, four rabbits were each injected intravenously with 5 cc. of a glucose-brain-broth culture from the cervix (strain 123). All died within fourteen days, but two had no gross lesions. One of the rabbits (276) had marked edema of the subcutaneous tissue and muscle fascia of the lower portion of the left leg. The popliteal lymph nodes of the left side were markedly hemorrhagic, and there were hemorrhagic areas in the sheaths of the nerves and surrounding small veins adjacent to the edematous area. There were also a few such hemorrhagic areas on the right side but no gross lesions elsewhere. In another rabbit (280), there was infiltration of the submucous tissue around the fore legs and neck, evidently from recent trauma due to a bite. There was edema of the pelvic cavity in which there was a small amount of clear fluid. The peroneus quartus on both sides was white and necrotic, and surrounded with marked edema and some blood. The skin overlying it was edematous, with tissue fluids and blood in and outside the blood vessels. There were no lesions elsewhere, and all other muscles were unchanged. *Streptococcus viridans* was recovered from the pelvic fluid and blood.

Since it was believed that the lesions were significant and related to the organism, a vaccine and filtrate were made in pancreatic digest broth and injected alternately about every third day for a period of one year. After the patient had used the vaccine for three months, a letter came stating that she had had no recurrence of the trouble after the vaccine was started. Twelve months later a letter contained the following: "Mrs. —— has been getting along very well. There has been no recurrence of the phlebitis and her health has been exceptional. I am writing to ask your advice about continuing the vaccine and filtrate. She has not had an attack since last September. This is the longest interval in twenty years."

ULCER OF THE STOMACH

Certain observers accept the infectious theory of ulcer of the stomach and duodenum, while others do not. Recently, at the Mayo Clinic, a number of patients have had symptoms typical of ulcer, including tarry stools, and yet the roentgen-ray data were negative. At operation no ulcer was found, but generally the first portion of the duodenum was stippled with petechial submucous hemorrhages, and a diagnosis of duodenitis made. In view of this and because such patients had one or more infected foci, cultures were also made as a routine from these foci and injected into animals. Lesions of the duodenum and stomach were produced in 40 per cent of the cases of duodenitis and ulcer combined. When cultures were made from cases with definite foci and active symptoms the percentage was 68; positive results were obtained in 3 per cent of control cases. Following is an illustrative case:

CASE 5.—*History.*—A man, aged 48, who came to the clinic, Dec. 9, 1925, while working three years before, had felt faint and sick, and a little later vomited. He was taken home and vomited a few more times, most of the vomitus being dark blood. After three or four days he was better except for weakness. He was well until three weeks before examination at the Mayo Clinic, when he felt nauseated and weak, with a slight pain across the upper part of the abdomen. His physician prescribed "bromo-seltzer." An hour later he vomited dark clots of blood, and the bowels were loose and tarry. He was confined to bed for four days and after that was definitely anemic. Since then he had had slight aching pains in the region of the epigastrium, worse after meals.

The systolic blood pressure was 106, the diastolic, 68; the hemoglobin was 76 per cent; the leukocytes numbered 6,800; total acidity was 68, and free hydrochloric acid, 54. He had prostatitis 3 and vesiculitis 2. The roentgen-ray diagnosis was probably ulcer of the stomach, and the clinical diagnosis duodenitis. The patient was advised to have his tonsils and bad teeth removed.

Animal Experiments.—Cultures were made from the root of the extracted tooth, and two rabbits were injected with 8 and 10 cc. each of a glucose-brain-broth culture (strain 733). Both animals died three days later. Both had numerous petechial hemorrhages of the stomach and the first portion of the duodenum. There were no petechial hemorrhages elsewhere, and the rest of the bowel was grossly unchanged. Cultures of the blood revealed *Streptococcus viridans*.

Sections of the hemorrhagic portions of the duodenum stained with hematoxylin and eosin revealed villi greatly distended with red blood cells. In the region of the smaller blood vessels, even beneath the submucosa, sections stained for bacteria with Gram's stain revealed scattered diplococci and occasional short chains.

LESIONS OF THE HEART

Definite proof of the relationship of foci to endocarditis has been reported from time to time, and it is quite generally accepted that myocarditis may be due to foci of infection. However, the experimental data on this phase of the subject are relatively scarce. A case of cardiac lesions is described:

CASE 6.—*History.*—A man, aged 35, who came to the clinic, Feb. 10, 1925, for six months had become fatigued easily, and was breathless on exertion. He had substernal pain and coughed some at night, but he had a good appetite and had not lost weight.

The hemoglobin was 65 per cent; the erythrocytes numbered 3,970,000, the leukocytes, 8,200; the Wassermann reaction was negative; the tonsils were graded 2, and there was periapical infection of four teeth. The heart was enlarged; the rate was markedly irregular, and there was mitral regurgitation and mitral incompetency. The left border of the heart was 13.5 cm. to the left of the midsternal line. The electrocardiogram revealed a rate of 115, with left ventricular preponderance, auricular fibrillation, inversion of the T wave in all derivations and slurring of the Q-R-S complex in derivation 1. The patient was put to bed and given tincture of digitalis, and after a month's rest the heart had decreased in size and he was generally improved.

There was nothing in the history and the physical examination to account for the myocarditis except the infected teeth. Because of his poor physical condition only one tooth was removed at this time and cultures of its apex taken; but instructions were given to have the others extracted later.

Animal Experiments.—A pure culture of *Streptococcus viridans* was obtained from the cultures of the tooth (strain 119), and injected into eight rabbits. Of these rabbits, six developed lesions in the heart consisting either of petechial hemorrhages in the endocardium, vegetations of the valves, myocarditis or a combination of these lesions. Two rabbits (299 and 300) were injected on three successive days with glucose-brain-broth cultures of the tooth. The first rabbit died on the fourth day with a huge dilatation and beginning myocarditis of the right side of the heart. The blood was sterile. The second rabbit was chloroformed a week after the first injection. Necropsy revealed marked vegetation of the tricuspid leaflets, with septic infarcts of the right lung and endocarditis of the right ventricle. *Streptococcus viridans* was recovered from the infarcts but not from the blood. Two rabbits (315 and 316) were reinjected with subcultures, and the first rabbit developed pericarditis with petechial hemorrhages of the right ventricle. Both rabbits developed arthritis. Four rabbits (325, 327, 324 and 326) were injected with the original culture kept in soft agar. The first rabbit remained well and was chloroformed after several weeks but revealed nothing. The second rabbit died within twenty-four hours after the injection of 7 cc. of the culture, and multiple petechial hemorrhages of the left ventricle were found. The third rabbit received three injections of 2 cc. each and died two days after the last injection. Necropsy revealed a beginning endocarditis of the left side of the septum, with extension into the myocardium. The fourth

rabbit received three injections of 5 cc. each and died three days after the last injection. The right side of the heart was markedly dilated with beginning myocarditis and marked subepicardial fat infiltration. Sections revealed marked hyperemia, some infiltration and early myocarditis. Sections of the heart of another rabbit (300) stained with hematoxylin and eosin revealed patchy areas of necrosis, and sections stained with Gram's stain demonstrated the diplococci sparsely scattered near these necrotic areas.

SUMMARY

Micro-organisms, usually streptococci, freshly isolated from foci of infection, tend to produce lesions in animals corresponding to the lesions in the patient from whom they were isolated. Any one or several of the foci studied (teeth, tonsils, prostate or cervix) may harbor the causative organism in a given case. The incidence of specific localization, however, was the highest in the case of cultures from infected teeth. Aside from injury, fatigue, and so forth, the inherent property of bacteria to localize electively in certain tissues determines largely the site of the disease in persons harboring foci of infection. This holds true, not only for strains isolated in acute but also in chronic diseases; and advanced changes, such as occur in chronic arthritis, have been produced experimentally, exacerbations occurring repeatedly following injection. Causal relationship between the organisms and the lesions produced was established through isolation of the former from the lesions when the blood and other tissues proved sterile, and by their demonstration in sections. The method of estimating the localizing power in animals of organisms isolated from foci of infection has diagnostic as well as therapeutic value. It often serves to demonstrate which of a series of organisms commonly found in foci bears causal relationship to the systemic disease and what particular focus harbors such an organism, and it provides the means for active immunization with specific autogenous vaccines.

ABSTRACT OF DISCUSSION

DR. RUSSELL L. HADEN, Kansas City, Mo.: I believe so thoroughly in the principle of elective localization that I can only agree heartily with all of Dr. Nickel's conclusions. At present there is a great difference of opinion, particularly among laboratory workers, as to whether or not there is such a thing as selective activity of bacteria. The success or failure of such work depends on two things. First, it depends on the use of a culture medium that is satisfactory. The short period that elapses between the time the organism is removed from the human body and introduced into the experimental animal is of great importance. We have to provide, during this short period, as nearly as possible the same living conditions as have existed in the patient. It is also vitally important that only a short period elapse between the time of removal of the organism from the patient and the introduction into the animal. We know that most workers who have failed have not used the proper medium and have not worked quickly. Often the cultures have been transferred over a period of days or weeks before they have been injected into the experimental animal. The question comes up as to what is the practical value of work such as this. First of all, it is evidence for or against the theory of elective localization. That is very important because it has to do with the second point, and that is the proof in the individual cases of the relation of a focus to disease. Certainly the best experimental proof we have of the relation of a focus to disease is the reproduction in the experimental animal of the lesion from which the patient suffers. That, in turn, depends entirely on the principle of elective localization. Likewise, this work shows the possibility of such organisms and such foci in the pathogenesis of systemic disease. It is a common error to conclude that, if we are able to reproduce in animals the lesion from which the animal suffers, the patient will be relieved on removal of the focus. Of course, that is what we like to do, but such does not necessarily follow. The most important clinical point in focal infection is to realize the potential danger of chronic foci, and remove them before they cause systemic disease.

DR. CLYDE BROOKS, University, Ala.: At the meeting of this section two years ago in Chicago I read a paper on a treatment of arthritis by using the split protein. We have continued the work with this protein with very good results. We have some cases that have been very resistant. I have one patient under observation now, a woman, aged 75, who had arthritis for about ten years before she began the protein treatment. If she takes a series of injections of protein she loses pain and other signs of arthritis, but after a while she has to return to the protein treatment. By doing this she can keep very comfortable but she apparently is not able to get along without it. My experience with protein treatment or nonspecific protein treatment is that it is superior to vaccine treatment for the reason that with the protein there is no reaction, chill or shock of any kind. At the same time, the clinical results are very apparent.

DR. W. W. DUKE, Kansas City, Mo.: There are two chief facts of importance in relationship to foci of infection. One is the nature of the infecting micro-organism; the other is its localization. If we had an infection with the given micro-organism, I think we would all admit that it would be much worse for the patient if it were localized on the sole of the foot. It would also be worse if localized in hard, bony tissue than if located in loose tissue, as in the axilla. In the axilla the tissues expand so easily as almost to amount to drainage. This is why I believe that an infection at the root of a tooth is such a vicious infection. The harm it can do is out of proportion to its size. Given infection at the root of a tooth with a certain micro-organism, the damage done varies according to location. For example, if the infection is at the root of a loose tooth which occludes with the upper teeth, it is constantly being traumatized by the act of mastication and scatters infection through the body. If the same tooth should carry a bridge, thereby carrying the load for a number of teeth, it is certainly more harmful than a tooth solidly embedded in bone and especially if it should be out of occlusion with the opposing teeth. Such an infection would not be traumatized and there would be less tendency for the infection to be scattered. I found in my experience, which has been considerable, that the loose teeth are apparently the worst teeth of all. The teeth firmly embedded in bone, especially those that do not occlude with teeth in the opposite jaw, have seemed much less injurious.

DR. JAMES H. HUDDLESON, New York: I should like to know whether Dr. Nickel found encephalitis resulting from his cultures of joint cases, and also whether the skin cases produced any encephalitis parallel to the encephalitis that seems to have been produced by herpes virus.

DR. A. C. NICKEL, Rochester, Minn.: In this series of experiments I have not had any definite encephalitis in rabbits. In rabbits injected intravenously with other cultures, I have obtained cerebral symptoms occasionally without any gross lesions, but I am unable to speak definitely regarding this matter, as I have not yet examined the sections of the brain and cord. Subsequent to the removal of a focus, the use of an autogenous vaccine often seems to be of great value. However, we do have cases which apparently are not benefited by an autogenous vaccine but which have a reaction following split-protein therapy. On the other hand, we also have cases which have had no relief through the use of a nonspecific vaccine but which responded well to an autogenous vaccine. In our vaccine therapy we do not inject an amount sufficient to cause a systemic or marked local reaction, as has been inferred, but aim to stay just below that point; and if such a reaction occurs, the next few injections are decreased in amount.

THE EFFECT ON VISUAL ACUITY OF VIEWING MOTION PICTURES

PRELIMINARY REPORT *

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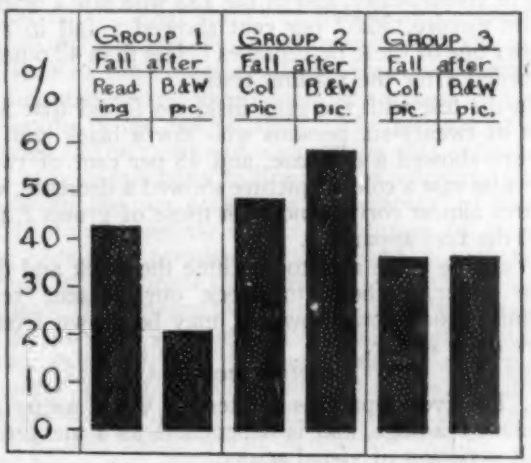
In reviewing the literature on eyestrain caused by viewing motion pictures, we find no recent articles. In fact, little has been written, and still less, if any, experimental work has been done. The older articles express the opinion of various ophthalmologists, which are of little value today, because of the perfection of the technic, which removes the flicker and other objectionable features. We also have the introduction of the colored motion picture. In this regard, J. A. Wilson [1] says: "Absence of natural color in a photograph renders identification of the objects more difficult and increases the necessity for fixation and attention." Some of our experimental data bear out this statement.

To do any experimental work, it was necessary to have at our disposal apparatus for testing visual acuity by which retinal fatigue could be ascertained, a projection room, and access to an assortment of black and white and colored films. Through the courtesy of the Riggs Optical Company, we were supplied with various paraphernalia for the examination and testing of eyes. Through the courtesy of Mr. Robert Fairbanks, suitable rooms for examination, projection rooms for exhibition of films and access to colored and black and white films, and all necessary help were placed at our disposal. For subjects we have used students from the University of California, Southern Branch, students from the California Christian College, a class of junior high school children, and some business people of Los Angeles. In all, more than 150 persons were examined.

After some preliminary experimentation with various methods, we arrived at the conclusion that the change in visual acuity as measured by the Ives apparatus was the best index of retinal fatigue. The readings obtained on any one individual with the apparatus varied less than 0.05 on three successive readings in nearly all subjects. As a control test we used the determination of the position of a gray circle painted in one corner of a lighter gray square cardboard in a constant illumination. The distance at which the circle was identified was used for the record. After trying this on about twenty-five subjects and finding that it checked with the Ives test, we placed our reliance entirely on the latter, as the readings were more rapidly obtained. The army air service used the Ives test to determine the effect of smoking on visual acuity, and as it was found that 70 per cent of the subjects showed diminution in visual acuity after one cigar, we were impressed with the sensitivity of the test.

Our procedure was then as follows: The group to be tested was assembled and the visual acuity read on the first subject, all having been given a number. Readings were made until three successive constant ones were obtained. In most instances these were the first three readings made, and rarely were more than five trials necessary. The subject was then sent into a projection room and the picture begun. The rest of the group followed at one-half minute intervals. At the completion of the picture the subjects were taken out in the same order that they went in, and immediate tests were made. For the reading tests the same examinations were made and the subjects sent into a well lighted adjoining office, where they were required to read current magazines for a period of forty-five minutes, after which the same tests were made. The length of time required to view a picture averaged an hour and a half, which is twice as long as the time we used for reading tests, forty-five minutes being the approximate maximum time we could keep the subjects reading without discomfort.

In tabulating the results we find that there is a marked difference in the results of the same tests in different groups. Therefore in the comparison of results we have made three groups: group 1, consisting of sixty-eight persons on whom the reading test, and the test with a black and white picture was done; group 2, sixty persons on whom the tests with the viewing of a black and white and a colored picture were done, and group 3,



Results of tests.

a miscellaneous group of ninety-three, who saw the colored picture, and 153 who saw the black and white picture. In the last group the same persons did not see the two pictures, and the results are less reliable, but are of interest.

Before going further, we shall explain what we mean by the terms black and white and colored pictures. The term black and white we have used to designate the motion pictures as now commonly seen without color, an example of which is "Don Q." The colored pictures are taken by the new Technicolor process, and projected in color, as "The Wanderer of the Wasteland." In this process two pictures are taken by the same camera, one through a red filter, and one through a green filter. The prints are dyed red and green, and then glued together, so that the light projected through them is given its color value on the screen.

The accompanying chart gives the results. In group 1, after reading for forty-five minutes, 42.6 per cent showed a fall in visual acuity, while of the same group after viewing a black and white picture, only 20.6 per cent showed a fall. An interesting side light on this observation was that when a group that had been reading for forty-five minutes was sent immediately into a projection room, and viewed a picture for one and one-half hours, 83 per cent of those who had shown a fall

* Read before the Section on Ophthalmology at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

1. Wilson, J. A.: Brit. J. Ophth., November, 1920.

in reading showed an improvement after seeing the picture. We explain this by assuming that the subject was bodily tired or mentally fatigued on entering the room, and the entertainment of the picture had provided relaxation for him.

In group 2, composed of different individuals from those in group 1, we find a greater number showing diminution in acuity following pictures than in group 1. This is probably explainable by the difference in the sensitivity of the eyes of the persons composing the two groups. Here we are comparing the black and white and the colored picture effect on the same persons; 58.3 per cent showed diminution after a black and white picture, and 48.3 per cent after a colored picture. Thus, there is a difference which would indicate that the colored picture does not cause as much fatigue as the black and white. This was borne out by the opinions of the subjects.

In group 3, the results of all those having seen a colored picture and all those having seen a black and white picture were tabulated, and these individuals are not the same in each case. Of the ninety-three subjects who viewed a colored picture, 36.58 per cent showed a fall in visual acuity, and of the 153 who saw a black and white picture, 36.62 per cent showed a fall in acuity. Either one of these percentages is less than 42.6 per cent recorded after the reading tests.

In the test with the grey disk, we found that 57 per cent of twenty-six persons who saw a black and white picture showed a decrease, and 45 per cent of twenty-two who saw a colored picture showed a decrease, which figures almost correspond with those of group 2, tested with the Ives apparatus.

We hope to be able to continue the work and devise some other methods to check our present results. Definite conclusions, however, may be drawn from the work done so far.

CONCLUSIONS

1. The Ives apparatus for testing visual acuity gives constant readings, and is dependable as a measure for small variation of visual acuity.

2. More fatigue is evident after forty-five minutes of reading current magazines than by viewing either a black and white, or a colored motion picture for one and one-half hours, if one uses the visual acuity as a criterion for fatigue.

3. The viewing of colored pictures of the Technicolor process is not more fatiguing to the eyes than black and white pictures, but on the contrary seems to cause less fatigue as judged by the impairment of visual acuity.

4. Those who suffer eyestrain from motion pictures are those who are unable to accomplish other ocular work without fatigue.

Westlake Professional Building.

ABSTRACT OF DISCUSSION

Dr. Charles A. Bahn, New Orleans: Moving pictures act as a more or less severe test of eye endurance, depending, however, on three widely varying factors—the moving picture, the eyes and the individual. The authors infer that the change of visual acuity as measured by the Ives chart is an index of eye fatigue and hence of visual comfort. My experience with this chart has not thoroughly convinced me that this is entirely true, because ocular fatigue is of necessity a manifestation of several variable factors, which include central vision further influenced by corrective glasses, muscle imbalance, visual fields and the general bodily health, any one of which alone would hardly represent the correct interpretation of the sum total of all together. I should like to see more corroborative data on this subject. The fact that about ten million people daily view moving pictures in this country without serious symptoms shows that in the aggregate the movies have no markedly injurious effect on visual acuity or ocular comfort. From a practical standpoint it would be interesting to know whether or not moving pictures under unfavorable conditions as seen in the worst class of shows sufficiently tire approximately normal eyes to justify a remedy. The fact that visual acuity was influenced by smoking does not of necessity mean that the Ives chart correctly measures eye fatigue after viewing distant objects, as is the case in moving pictures. If, however, the Ives chart is proved practically to measure ocular fatigue, its value will be greatly enhanced not only as regards moving picture fatigue but also fatigue in the various industries, and the determining of any kind of fatigue. I should like to ask the authors whether or not, in some of the cases that they have examined, the difference of visual acuity was so slight that they might be in doubt.

Dr. W. H. Crisp, Denver: It seems to me very possible that the variations of visual acuity obtained were not so much due to retinal fatigue as to accommodative fatigue. I may have missed it, but I did not seem to find in the article the statement that these different subjects were all given very accurate refractive correction before the tests were made. It seems to me that, if they had to make excessive efforts of accommodation of varying degree in looking at the pictures, this would have an important bearing on the results. As to the difference obtained when the subjects had shown a falling off in visual acuity after reading, and then showed an improvement in visual acuity after looking at the pictures following the reading, that seems explainable on the same basis. When they were reading they strained their accommodation to a much greater degree than when looking at the pictures. The pictures were really a rest, because accommodation was not employed to so great a degree. I believe the element of fatigue in looking at moving pictures is principally a matter of retinal fatigue, largely associated with the fact that there is a dark interval about half as long as the light interval, interrupting the light stimuli fifteen or sixteen times a second. I should like to have the author take up this question as to whether the influence of accommodative fatigue was considered.

Dr. Walter B. Lancaster, Boston: I should like to ask whether the authors have figures on the amount of change in visual acuity, perhaps the average amount, the minimum amount and the maximum amount. I would add to Dr. Crisp's suggestion about accommodation the great importance of fatigue of fixation. In any thing like the moving picture problem fixation is a very important factor, especially if there is a little tremor at times. Another suggestion would be a comparison of this test with the tests of Ferree and Rand in their prolonged and careful study of the problem of ocular fatigue under certain conditions. It would probably be found that, for reasons fully set forth by Ferree and Rand, the visual acuity test is of little or no value as a criterion of fatigue.

Dr. M. F. Weymann, Los Angeles: We have had very definite indications that visual acuity is influenced by prolonged ocular work, particularly in one subject who was a film cutter. He worked under severe ocular strain, following the small pictures and cutting the films in the proper place. When he came in we were unable to get any constant visual acuity on reading at all. He told us he was suffering from ocular symptoms at all times although there was no demonstrable pathologic condition. His refraction was normal. There is no doubt that mental and other outside influences as well as ocular fatigue affect the acuity of vision. This was illustrated in one large group working in a crowded projection room with bad ventilation. Here the readings were much below the average. It is unfortunate that the question of retinal fatigue and ocular fatigue has been confused in the discussion. We did not attempt to show retinal fatigue; we were trying to find out the relative comparative diminution of visual acuity after reading and after viewing the pictures.

Of course, muscle convergence and accommodation could affect the acuity. Later we intend to take up a smaller group with color fields and muscle balance. In the reading one uses the accommodation, and the pictures are viewed from a distance without accommodation in emmetropic persons. The front seats in our projection room were missing, and the first row was far enough back so that the picture was viewed comfortably. The amount of variation in visual acuity varied from one point on the Ives scale to four or five points. We considered when there was a variation of one point or more that it was enough to be called either a decrease or an increase. In the Ives test, normal vision is rated as one. As to the matter of refraction, these men were mostly college students who had normal visual acuity. Only two or three had subnormal acuity. Some of them did wear glasses. As I said, we went over a large number of individuals and we have not had time to work out any further details before the presentation of this paper, which we hope will bring suggestions from the section as to how to proceed with further work.

THE VACCINATION SCAR AS AN INDEX OF IMMUNITY

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The fact that "vaccination protects against smallpox and against itself" has been backed by such a mass of evidence that no practitioner of experience would attempt to question it. In the hundred and thirty years since Jenner's classic experiment, the value of vaccinia as a prophylaxis against smallpox has been demonstrated by clinical observation to the point at which we can count it scientifically proved. The fact that vaccination protects against itself has been recognized for practically as long a time owing to the inability of a person recently vaccinated to get a typical "take" on subsequent vaccination. It was not until Pirquet,[1] in 1906, demonstrated the neglected fact that this presumed nonsusceptibility was in reality the prompt reaction of an immunized individual that there was a fundamental observation on which to base a judgment as to the immune status of such an individual.

It is hard to say, however, just what relationship exists between immunity to variola and immunity to vaccinia. It may be assumed for the present that, independent of the biologic connection between variola and vaccinia, changes in the grade of immunity to one are coincident with similar changes in immunity to the other. In other words, a person who is highly immune to smallpox is at the same time highly immune to vaccinia, while decreasing immunity to smallpox is accompanied by a parallel decreased immunity to vaccine. The converse is also probably true, and for practical purposes it is sufficient to create immunity to vaccinia in order to protect against smallpox.

Force,[2] in 1913, first suggested the use of the "immune reaction"—the prompt reaction described by Pirquet—as an administrative criterion of immunity. Following Force's suggestion, this plan has been adopted for maritime quarantine procedure by the U. S. Public Health Service, and as a routine in the U. S. Army and Navy.

Unfortunately, however, the recording of immune reactions has not as yet become a rule in the technic of the entire profession. In the minds of many physicians, there exists another indication of immunity against smallpox. This is the scar of previous vaccination. The impression is undoubtedly prevalent that immunity is indicated by the size, number and character of the scars of previous vaccinations. Against the mild forms of smallpox that have occurred in the United States since 1896, such slight immunity as remains from a vaccination performed at any time previously and shown by an acceptable scar is in many cases sufficient to protect. The more virulent strains of smallpox, on the other hand, demand a higher protection than that indicated by the mere evidence of one former vaccination. The statistics of Marson[3] are most frequently quoted, and show a higher mortality in the London Smallpox Hospital, 1836-1855, among those with poor, ill defined scars of vaccination than among those with good, marked scars, and among those with few scars than among those with many scars. But in each of these classifications it is the latter group that is likely to have been the more recently vaccinated.

RESULTS OF OBSERVATIONS

In an attempt to find out how much reliance could be placed on "good scars" as indicators of immunity against vaccinia and therefore against smallpox, record was kept of the cicatrices of previous vaccinations on the men undergoing vaccination on entrance to Lehigh University in the fall of 1924. The relation of those readings to the results of vaccination was summarized and has been published.[4] Briefly, this summary showed that among the men presenting "good scars" of previous vaccinations a slightly higher percentage of vaccinias were obtained, presumably indicating a higher percentage of complete absence of protection against smallpox, than among those who showed "fair scars."

The number recorded (196 good scars, 193 fair scars), however, was not sufficient for any general statement, and it was determined that this year (1925-1926) a more accurate record would be taken and, if possible, conclusions would be drawn.

Realizing that the terms "good scar" or "fair scar" are simply expressions of individual opinion, we tried to limit the personal equation so far as possible. As each man appeared for the immunity test or vaccination required in connection with the health examination, the following notations regarding his previous vaccination scars were made on a vaccination record card: (1) location; (2) size in millimeters (length and breadth); (3) whether pitted or smooth, and (4) whether faint or marked. The latter, of course, depended on personal judgment; but as there were nearly a thousand readings made in the course of a few days, a fair comparison can be relied on. These readings were all made prior to revaccination, and therefore could not in any way be influenced by the results of the vaccinations.

1. *Site of Previous Vaccination.*—This notation seems of little value, as it is generally believed that the location of the vaccination has no bearing on immunity. It is of passing interest, however, in showing the consensus as to convenience.

When more than one scar was present, we recorded each cicatrix although it was realized that subsequent operators did not have the full choice that the first operator had. The method of recording these sites of scars was simple. We divided the upper surface of the

1. Pirquet, C.: Wien. klin. Wchnschr. **19**: 855-858, 1906.
2. Force, J. N.: California State J. Med. **11**: 290, 1913.
3. Marson, J. F., in Reynold's System of Medicine, Philadelphia, J. B. Lippincott & Co., 1865.
4. Thomas, Stanley: Pub. Health Rep. **41**: 37 (Jan. 8) 1926.

arm from the shoulder to the elbow into nine equal rectangular blocks, number 1 being the upper section near the body; number 2, above the insertion of the deltoid; number 3, away from the body; number 4, on the level of the insertion of the deltoid near the body; number 5, the insertion of the deltoid; number 6, on the same level away from the body. Numbers 7, 8 and 9 corresponded to 1, 2 and 3, but were below the insertion of the deltoid.

Altogether there were 874 cicatrices recorded, 29 being on the right arm, 9 on the left leg, 2 on the right leg, 1 on the left forearm, and the remainder, 833, on the left arm. Table 1 shows the approximate location

Table 1.—*Location of Scars on Left Arm*

Number of Space	Number of Scars	Site of Vaccination
1	17	
2	190	Directly above the insertion of the deltoid
3	87	
4	23	
5	232	Approximately at the insertion of the deltoid
6	88	
7	11	
8	93	Directly below the insertion of the deltoid
9	92	

of the latter scars. It will be seen that the most common site for vaccination is close to the insertion of the deltoid muscle; the second most common site is immediately above this site, and the third is immediately below it. Following these about equally in popularity are the three spaces 3, 6 and 9, which represent the outer part of the arm, while the spaces 1, 4 and 7, representing the part of the arm near the body, are seldom used as a site of vaccination.

2. *The Size of Old Scars.*—The relation of the size of vaccination scars to immunity is shown in table 2. In recording the size of scars, we took actual measurements. These were arbitrarily grouped in making up this table.

Table 2.—*Relation of Size of Vaccination Cicatrix to Immunity*

	Immune Reactions		Vaccinoid* Reactions		Vaccinias		Total
	No.	%	No.	%	No.	%	No.
Less than 250 sq.mm. (⅝ inch or less in diameter).....	351	76.4	93	20.3	15	3.3	459
From 250 to 500 sq.mm. (about ⅝ inch in diameter)	143	65.6	62	28.4	13	6.0	218
From 500 to 1,000 sq.mm. (about 1 inch in diameter)	104	70.7	38	25.8	5	3.5	147
More than 1,000 sq.mm. (1½ to 2 inches in diameter)...	34	54.0	26	41.3	3	4.7	63

* The percentage of vaccinoid reactions (reactions with maximum diameter of erythema between three and seven days after vaccination) is slightly less than that usually given by a vaccine of full potency, although of the thirty students who had had no previous attempt at vaccination, all gave successful primary vaccinias. The vaccine used by us came directly from the manufacturer and was never more than two hours out of the icebox during the day of use. It is possible that icebox storage during the period between receipt of the vaccine and its final use was not cold enough.

Judging by total loss of immunity (the vaccinias), the students with the smallest scars had the best protection, those with medium large the next best, those with large scars the next, and those with medium small scars the poorest protection. Judging by the immune reactions, the smallest scars indicated the best protection, the medium large the next best, the medium small the next, and the largest scars the poorest protection.

From this table it would appear that a large vaccination scar was indicative of less protection than a small one. Of course no one would attempt to draw such a conclusion, and we are forced to the idea that the size of a vaccination scar simply indicates the amount of epithelial loss, and does not necessarily parallel the relative immunity to vaccinia or to smallpox.

3. *Character of Vaccination Scar.*—The degree of cicatrization represented by the scar tissue in old vaccination scars was noted this year in two ways: whether pitted or smooth and whether marked or faint. In general, it would seem that a pitted, marked cicatrix would represent a more recent vaccination than a smooth faint one. That this is in general true is shown by table 3.

Table 3.—*Relation of Age of Scars of Former Vaccinations to Character of Scars*

	Age of Scar									
	5 Years 1921-1925		10 Years 1916-1920		15 Years 1911-1915		20 Years 1906-1910		25 Years 1901-1905	
Character of Scar	No.	%	No.	%	No.	%	No.	%	No.	%
Pitted, marked....	101	59	89	70	188	45	25	14	0	..
Smooth, marked...	54	30	15	12	85	22	80	45	0	..
Smooth, faint.....	16	11	16	13	85	22	30	17	8	80
Pitted, faint.....	0	..	6	5	46	11	42	24	2	20
Totals.....	171	100	126	100	404	100	177	100	10	100

The bearing this has on immunity is brought out in table 4.

Table 4.—*Relation of Reactions to Character of Old Vaccination Scars*

	Immune Reactions		Vaccinoid Reactions		Vaccinias		Total
	No.	%	No.	%	No.	%	No.
Pitted, marked.....	284	70.8	102	25.4	17	4.0	403
Smooth, marked.....	167	71.3	56	24.0	11	4.7	234
Smooth, faint.....	110	69.2	39	24.5	10	6.3	159
Pitted, faint.....	73	76.1	21	21.8	2	2.1	96

According to the relative proportion of vaccinias as well as of immune reactions, the pitted faint scars would indicate the greatest immunity, and the smooth faint scars the least. If we regroup this table into parts showing the differences between pitted and smooth scars and between marked and faint scars we have the results presented in table 5.

Table 5.—*Differences Between Scars*

Scars	Immune, per Cent	Vaccinoid, per Cent	Vaccinia, per Cent
Marked.....	71.1	24.7	4.2
Faint.....	71.8	24.0	4.2
Smooth.....	70.5	24.2	5.3
Pitted.....	71.4	24.7	3.9

It would be difficult to show any difference between the protection afforded by these different types or characters of scars. Among the men showing marked scars we had practically the same percentage of immune reactions, vaccinoids and vaccinias as among those showing faint scars. The men with pitted scars likewise showed practically the same resistance as those with smooth scars.

CONCLUSIONS

From the results of our observations we would say: The size of the scar of previous vaccination, the character of the scar (whether pitted or smooth) and the amount of scarring (whether marked or faint) have no practical bearing on a person's immunity against vaccinia or variola.

Clinical Notes, Suggestions and New Instruments

A NEEDLE HOLDER WITHOUT CATCH, DESIGNED FOR SMALL CURVED NEEDLES *

CONRAD BERENS, M.D., NEW YORK

This needle holder was designed for three reasons:

1. Many small curved needles are broken by needleholders with a catch and with wide jaws.

2. The snap of a catch sometimes startles a patient.

3. In introducing needles in delicate operations it is sometimes awkward to manipulate a catch.

The handle is 83 mm. long; the jaws are 8 mm. long and 2 mm. wide. The lever arm that manipulates the blades is 55 mm. long, which permits the needle to be held firmly with slight pressure. At the end of the arm that activates the jaws is a rounded and roughened finger piece which encircles three fourths of the handle, permitting the needle holder to

Needle holder.

be rotated in the fingers, still maintaining even pressure on the needle. The needle holder was first designed for introducing small curved needles in cataract work, in which the sound of an opening needle holder might frighten the patient, but it has been found useful in holding any small curved needle used in eye or nasal surgery.

30 East Fortieth Street.

SULPHARSPHENAMINE IN THE TREATMENT OF WARTS

RICHARD L. SUTTON, M.D., KANSAS CITY, MO.

Verrucae, and particularly those of the juvenile flat type, often present a therapeutic problem that is hard to solve. The remedies that have been suggested are legion—curettage, electrolysis, radium, roentgen ray, fulguration, caustics of various kinds, carbon dioxide snow, salicylic acid, sulphur, sulphurated potassa and numerous others.

Internally, C. J. White found yellow mercurous iodide helpful; Jadassohn has long advocated arsenic; Colrat of Lyons was first to suggest magnesium sulphate, and many practitioners have prescribed nitrohydrochloric acid with success.

In deciding on the character of the local application to be used, care must be exercised to select something that will not cause permanent scarring; otherwise, the result may be worse than the disease. I have known of many a reputation damaged by so slight a thing as this.

In 1922, Siemens found arsphenamine, dissolved in physiologic sodium chloride solution, and injected directly into the lesions, curative in a large percentage of cases. I gave this method a thorough trial, but, possibly because of improper technic, discarded it.

In July, 1925, a man who had previously been under my care several times for the treatment of plane warts of the face consulted me regarding another, and much more serious, affection. For the relief of the latter disorder, among other measures, a series of intramuscular injections of sulpharsphenamine was ordered. One month later, I again saw this patient, and in discussing his condition, he called attention to the fact that the little warts on his face, which had given him much trouble, had completely disappeared about a fortnight after the first treatment.

Since then, I have successfully employed the remedy in five other cases. While the number is not sufficient for conclusive proof, the results have been so satisfactory that I think the method worthy of further investigation. The average dose has been 0.4 Gm., and only sulpharsphenamine has been employed. The drug is dissolved in a minimal amount of sterile water, and injected directly into the gluteal muscles. In each instance, only one injection was required. Further reports, from other observers, would be of interest.

1034 Rialto Building.

* The needle holder is made by and may be obtained from George Tiemann & Co., 107 East Twenty-Eighth Street, New York.

* Read before the Section on Ophthalmology at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

IPRAL. — Calcium ethylisopropylbarbiturate. — $Ca(C_2H_5.C_3H_7.C.CONHCON:CO)_2.3H_2O$. The calcium salt of ethylisopropylmalonyl urea.

Actions and Uses.—Ipral has the therapeutic properties of barbituric acid. It is soluble in water and is absorbed promptly. It is claimed that it is excreted rapidly, but some action commonly persists for twenty-four hours. In therapeutic doses it affects the higher cerebral centers almost exclusively, and such doses exert no perceptible effect on the heart or circulation directly.

Ipral is used as a hypnotic to combat restlessness, irritability and sleeplessness. It is claimed that tolerance to ipral is not developed readily, but that its action is so persistent that a patient frequently sleeps on the night succeeding that when the hypnotic was administered.

Dosage.—From 0.12 to 0.25 Gm. (2 to 4 grains) followed by a cupful of hot water, tea or milk. Ipral is marketed in the form of 2 grain tablets, only.

Manufactured by E. R. Squibb & Sons, New York. U. S. patent 1,255,951 (Feb. 12, 1918; expires 1935); 1,576,014 (March 9, 1926; expires 1943). U. S. trademark 208,813.

Ipral Tablets, 2 grains.

Ipral occurs as a white, crystalline, odorless powder, with a slight bitter taste. It is soluble in about 40 parts of water at 25 C.; insoluble in alcohol. An aqueous solution is alkaline in reaction to litmus.

Add 0.2 Gm. to 20 cc. of water, acidify with 5 cc. diluted hydrochloric acid, filter, make filtrate ammoniacal, then add 2 cc. of ammonium oxalate solution; a precipitate forms, insoluble on addition of acetic acid in excess, but soluble on the addition of hydrochloric acid. Wash well the residue from the foregoing with water, dry at 100 C.; the melting point should be from 200 to 203 C.; to 0.05 Gm. of residue add 2 cc. sodium hydroxide solution; the residue dissolves. Place 2 Gm. in a glass stoppered flask, treat with 25 cc. of carbon dioxide free water and agitate occasionally over a period of two hours; by decantation separate the insoluble material, transfer the insoluble residue to a test tube, treat with diluted sulphuric acid and pass the emitted gases into 20 cc. of barium hydroxide solution; not more than a barely perceptible turbidity should result (*limit of carbonate*).

Dry about 1 Gm. accurately weighed, to constant weight at 100 C.; the loss does not exceed 12 per cent.

Transfer about 1 Gm., accurately weighed, to a glass stoppered cylinder, add 50 cc. of ether, stopper and shake the contents for five minutes. Decant the supernatant liquid through filter paper, and repeat using 25 cc. and 15 cc. portions, respectively, of ether, evaporate the filtrate to dryness in a tared beaker and dry to constant weight at 100 C. The residue should not weigh more than 4 per cent (*limit of uncombined ethylisopropyl barbituric acid*).

Dissolve about 1 Gm., accurately weighed, in water, acidify with 10 cc. of diluted hydrochloric acid, extract with five successive portions of ether, allow the solvent to evaporate spontaneously, dry the residue to constant weight at 100 C., and weigh; the weight of ethylisopropyl barbituric acid is not less than 78.5 per cent, nor more than 83.0 per cent. Ignite about 1 Gm., accurately weighed, cool, treat the residue with 5 cc. diluted hydrochloric acid, transfer to a 250 cc. beaker, add 25 cc. water and ammonia water until ammoniacal, warm, add 20 cc. boiling ammonium oxalate solution, boil and allow to stand over night; collect the precipitate on an ashless filter paper, wash with diluted ammonia water (1 part of ammonia water to 5 parts of water), transfer the precipitate to a platinum crucible, and ignite to constant weight. The weight of calcium oxide corresponds to not less than 8.0 per cent nor more than 8.5 per cent calcium.

RADIUM CHLORIDE-UNITED STATES RADIUM CORP. (See New and Nonofficial Remedies, 1926, p. 311).

The following dosage forms have been accepted:

Ampules Radium Chloride, 2 cc.-United States Radium Corp. (radium element, 50 micrograms).

Ampules Radium Chloride, 2 cc.-United States Radium Corp. (radium element, 2 micrograms). For Drinking Use.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 2, 1926

REVOCATION OF LIQUOR PRESCRIPTION PERMITS

The publication in The Journal of the names of physicians in California, Illinois, Minnesota, New York and Wisconsin, whose permits to prescribe liquor have been revoked, has aroused varying reactions. Several prohibition administrators have welcomed the action as a move toward securing better medical cooperation in the enforcement of the provisions of the Volstead Act; some have refused to furnish names, and at least two have said that the physicians in their vicinity were of such a high order of probity that they doubted the probability of revocations. The Director of Prohibition in Washington has written to the headquarters of the American Medical Association that instructions are being prepared to administrators generally to furnish The Journal with a list of the names and addresses of those physicians whose permits have been revoked, together with a brief statement of the causes for revocation.

The attitude of physicians toward this publication has been equally varying. One state society, through its executive committee, took official action urging the local prohibition administrator not to issue the names, and the latter has not forwarded such names to the headquarters office on the ground that he could not obtain local medical cooperation if publication of names was made. Another state medical society, through its council, condemned rigorously any member who prostituted the privilege conferred on him by law, stating that such members deserve no sympathy, and declared its intent to prefer charges, looking to revocation of the right to practice medicine in the state, of every physician found guilty of violating either the Harrison or the Volstead Act. In several instances, individual physicians who anticipated publication of their names have sought to bring pressure to bear on the editor, through various sources, to stop such publication. Moreover, some officials of local medical societies have pointed out that federal administrators in their vicinity sometimes revoke permits with slight reason and on the basis of but little evidence, relying, perhaps, on the fact that a protest or defense against such revocation was so complicated and costly a matter that the physician had but little recourse.

The newspapers of New York, Chicago, New Orleans and several other cities have published the names of physicians whose permits have been revoked or who have been indicted for violation of the prohibition law. Such publication has not, however, seemed to have the influence or to arouse the medical interest that attaches to publication of these names in The Journal.

At the Annual Session of the American Medical Association at San Francisco, in 1923, Dr. T. C. Chalmers presented to the House of Delegates the following resolution:

Whereas, The honor and integrity of the medical profession are being impugned by the unnecessary, unprofessional and unlawful prescribing of liquor by unprincipled physicians:

Resolved, That in the judgment of the House of Delegates of the American Medical Association, in session assembled, every state and county medical association should use its best endeavor to discipline physicians who either negligently or wilfully prescribe liquor otherwise than in accordance with law, and to purge the medical profession of physicians who wilfully, under the cloak of their profession, prescribe liquor for other than medicinal purposes; and

Resolved, Further, that the Secretary of the Association send a copy of this resolution to every state and county medical association affiliated with the American Medical Association.

This resolution received the approval of the Reference Committee and of the House of Delegates. At the session at Chicago, in 1924, a similar resolution was introduced by Dr. John D. McLean and again received the endorsement of the Reference Committee and of the House of Delegates. At the Annual Session of the Association at Atlantic City, in 1925, the House of Delegates adopted a resolution which recognized the fact that present prohibitions have operated mainly to prevent large numbers of physicians of standing and professional integrity from prescribing for their patients in accordance with their best judgment as to their patient's necessities, while the unlawful acts of unworthy practitioners have been promoted. Finally, at the session recently held in Dallas, the special committee appointed to consider the operation of a rational prohibition act said, "The medical profession cannot object to publicity affecting a named physician who has violated the law or against whom charges have been brought." It is apparently recognized that the strongest weapon for securing enforcement of the provisions of the Volstead Act that affect the medical profession lies in the publicity that may be given to the name of the persistent violator.

The questions at issue relative to publication of these names are important from both the social and the medical points of view. The Volstead Act definitely makes the medical profession the custodian of beverage liquor in this country. It has been argued—and with reason—that the custodianship is not a pleasant one. The government does not make any single group in its domain the custodian of dynamite,

revolvers or other objects with both good and evil uses. This custodianship, it has been urged, is granted to the medical profession, as a "privilege," because at least a considerable number of physicians are convinced that alcoholic beverages have distinct therapeutic uses. On the other hand, the word "privilege" in this connection is not apropos, since the patient who receives the liquor prescribed by a physician presumably requires it in order that he may recover from disease and become a more useful member of society. Regardless of the scientific evidence as to the therapeutic value of alcoholic beverages, their place in the social scheme needs no definition. These beverages, wrongly used, are as potent as dynamite in their power for evil.

Undoubtedly evils in the administration of the act arise through inequalities of action by federal prohibition administrators in various parts of the country. It is moreover unfair to the medical profession to make it the custodian of alcoholic liquors and then to prosecute—or persecute—its members for presumed offenses against the act arising through the necessities of what is, at best, a lamentable situation. In these circumstances, THE JOURNAL, as the official representative of organized medicine in this country, feels nevertheless that its duty to the public demands action that will influence, if not compel, physicians to strict observance of the Volstead Act so long as that act is a part of the law of this country.

TRENDS IN STUDIES OF AMEBIASIS

Much of the recent work on amebiasis apparently represents an effort to make a disease remarkably protean in its manifestations fit laboratory observations from studies of the ameba. Adequate proof is still lacking that the causes of the disease are cleared up by assigning 100 per cent pathogenicity to amebas of certain biologic characteristics, and a harmless rôle to all other species. Discussion and even controversy over methods of differentiating between wholly pathogenic and wholly harmless amebas still constitute an important theme of investigators, while the far more important problem of the ultimate factors in the cause of amebiasis — what makes any ameba produce disease — still invites solution. Discussions about the pathogenicity of certain bacteria were once similarly active.

Instances are reported of persons who, according to reports of competent protozoologists, still harbor pathogenic amebas and who have not had symptoms, recognizable as such, of amebic disease since their more or less brief attacks from ten to twenty-five years previously. Some of them never had a symptom attributable to amebic infection or infestation. The two possible exceptions to this statement are "pernicious anemia" and "sprue," which appear to be unusually prevalent among ex-amebic patients.

That there are pathogenic and nonpathogenic amebas found in the intestine of man has never been seriously questioned. That some amebas may occupy places somewhere between these two extremes, harmful under certain conditions and harmless under others, has been much discussed and still is an unsolved problem. In a sense, all amebas more than transiently present in the intestine may be of this class. That there are factors, apart from zoological species, profoundly influential if not determinative of the disease-producing potentialities of many intestinal amebas and possibly other parasites is not open to serious doubt. Charles F. Craig,[1] in his recent book, devotes considerable space to a discussion of *Vahlkampfia lobospinosa*, an ameba originally obtained by Musgrave and Clegg from dysenteric stools. Craig considers this ameba a harmless one. He tells of having seen convincing specimens of experimental amebic ulceration in monkeys' intestines in Musgrave's laboratory, but fails to make clear the fact that some of these specimens were secured by inoculating the monkeys with cultures of ameba 11524, or *Vahlkampfia lobospinosa*, as he has named it. Shortly after this ameba was isolated in cultures with a harmless bacterium, according to Musgrave, Clegg swallowed a heavy suspension of the bacteria without apparent harm. After a few days he swallowed an ounce of suspension made by washing the agar plate cultures of this ameba. He developed a typical infection, and the amebas were reclaimed from his discharges. In one of three other volunteers, similar results were obtained. This ameba was highly selective in bacterial symbiosis when first isolated, but, as is usual, after a number of transplants became less particular about its environment. Old cultures of the ameba were used by Clegg in successfully cultivating the leprosy bacillus in "pure mixed cultures."

That there still are unknown factors in the etiology of these infections is obvious. This problem does not appear susceptible of solution except by assuming various degrees of immunity both natural and acquired, varying degrees of virulence in amebas of the same species, or the existence of an unknown element in etiology. Supporting evidence for this assumption is shown in the greater resistance to infection in certain races and ages, particularly among children and aged persons who escape amebiasis with more than accidental frequency; in frequent prolonged infestation without apparent harm; in spontaneous recovery without treatment; in the pronounced influence, favorable and unfavorable, of intercurrent diseases, and in the frequent persistence of amebas in the intestines of persons years after their recovery from amebiasis.

Pathologists who see blood vessels containing numerous amebas in section after section through amebic ulcers of the colon usually conclude that thousands of amebas must gain entrance to the liver daily in practically every ulcerative colitis of amebic origin. Why is it that only from 1 or less to 20 per cent of the patients develop liver abscess, and why should there be

1. Craig, C. F.: Parasitic Protozoa of Man, Philadelphia, J. B. Lippincott Company, 1925.

even apparent racial predisposition to such abscesses? The vast majority, if not all liver abscesses, contain both amebas and bacteria, at least during their early stages, but as the abscess grows larger, first the bacteria and finally, occasionally, the amebas also may disappear, leaving a circumscribed abscess filled with inspissated entirely sterile material, which may be discovered only accidentally at necropsy twenty or more years later.

The mutual existence of amebas and bacteria intimately associated in cultures, possibly also in the intestine, liver and other tissues, is a subject worthy of further study. The element of selectiveness is intriguing, and its full explanation when it is found may prove illuminating. Bearing on the same point is the peculiar behavior of amebas and bacteria grown from the same specimens. The selectiveness in the symbiosis between the animal and vegetable microorganisms is manifested too frequently to be insignificant. The solution of these problems calls for further investigation by pathologists and bedside physicians, or, better yet, by team work between protozoologists and trained medical investigators.

MINERS' NYSTAGMUS

In spite of similarities in racial stock between the miners of North America and Great Britain, miners' nystagmus is practically unknown here, whereas in the British Isles more than 50 per cent of coal miners are affected. As the eye oscillates, objects seem to dance before the vision, and, in consequence, walking becomes difficult. When at work at the face of the coal, the miner's vision becomes completely befogged but clears if he rests and looks down. Usually, the nystagmus disappears in from six weeks to six months after the cessation of work, whereupon vision is found uninjured. Although this occupational disease has attracted serious scientific attention since 1870, a recent investigation by the Miners' Nystagmus Research Committee of the Medical Research Council has made it again a major topic in British medical writing. Search for the cause, in part, has centered around the effect of poor light. Mr. G. H. Pooley's [1] tentative conclusions are that the center of the macula is the most sensitive portion in bright light. As the intensity of light diminishes, the area of sensitivity is transferred to a signet ring shaped portion surrounding the macula. As the illumination becomes less, it is more and more difficult to maintain strict fixation and the eye travels around the object it is striving to fix. Thus, a type of nystagmus develops. Dr. Freeland Fergus,[2] on the contrary, feels that the disease is not primarily one of the eyes at all. He points out that the nystagmus is but one symptom of a more general disorder, of which night blindness, cephalalgia and muscular tremors are other manifestations. The pathologist and epidemiologist, he thinks, should be called on for help. Perhaps the pathologist could demonstrate a lesion of the central nervous system, possibly in Deiter's nucleus, in the cerebellum, or in both. Although Dr. Fergus does not offer a theory as to the origin of the disease, he feels that there may be something in the current idea of chronic gas poisoning, and that this might cause a lesion in Deiter's nucleus. Carbon monoxide, however, can hardly be incriminated, as nothing like miners' nystagmus occurs in cases of carbon monoxide poisoning.[1]

An interesting conjecture is offered by Mr. J. Prosser Davies,[3] who shows that in one of the collieries men are lowered 880 yards in sixty seconds. At this rate, during the middle of the descent the men are falling at a speed of 35 miles an hour. Could not this abnormal movement of the body, he asks, set up functional disturbances in the labyrinth and cerebellum?

Although nothing conclusive has been ascertained, contributions to a subject which has baffled scientific men for sixty years and which involves many thousands of workers in an essential industry of Great Britain, Belgium and France are important. In Great Britain, recently, the compensation problem has been enormously complicated by this disorder. The subject merits attention in America, particularly as there is no reason to assume that American miners are immune to the disorder.

BLOOD TESTS FOR PATERNITY

The announcement by Landsteiner in 1901 of definite blood groups according to the phenomena of isoagglutination and the application of the facts to blood transfusion, recorded by Ottenberg in 1907, constitute two of the most useful investigations in modern medical science.[4] Three years later, in 1910, von Dungern and Hirschfeld discovered that the substances in the blood cells on which blood grouping depends are inherited in accordance with Mendel's law. They saw the second major use to which knowledge of the blood groups might be put and asserted: "The fact that the demonstrable substances A and B in the blood cells can never appear in the children, if absent in both parents, is forensically available."

Among the reasons why legal reliance has not been placed on blood grouping in cases involving the question of paternity are two factors having but little relationship to the scientific issues. Much misinformation has been disseminated as to the nature of the test, with resultant doubt as to its usefulness. The courts, moreover, have not felt sure of their authority to compel a person to furnish a drop of blood for examination. According to Blewett Lee,[5] the purely legal question is

1. Pooley, G. H.: Miners' Nystagmus, Lancet **1**: 750 (April 10) 1926.
2. Fergus, Freeland: Miners' Nystagmus, Glasgow M. J. **105**: 161 (March) 1926.
3. Davies, J. P.: Miners' Nystagmus: A Tentative Theory, Lancet **1**: 884 (April 24) 1926.
4. Ottenberg, Reuben: Medicolegal Application of Human Blood Grouping, J. A. M. A. **78**: 873 (March 25) 1922; Medicolegal Application of Human Blood Grouping, ibid. **79**: 2137 (Dec. 23) 1922.
5. Lee, Blewett: Blood Tests for Paternity, Am. Bar A. J. **12**: 441 (July) 1926.

decided by the case of *Hoyt* v. *Brewster Gordon and Company, Inc.*, tried in New York. Lee concludes that "the requirement of a drop of blood for the purpose of ascertaining paternity is within the legitimate province of the court either in civil or in criminal cases."

Concerning the medical and laboratory side of the subject, the basic facts supplied by von Dungern and Hirschfeld have remained unshaken.[4] Changing their A B terminology into the four group Jansky terminology, the following outline is elaborated by Ottenberg:[4] If both parents are in group I, all children are in group I; if both parents are in group II the children can be of group II and group I; if both parents are of group III, the children will be of group III or group I; if the parents are of group I and II, the children must be of group I or II; if the parents are of groups I and III, the children would belong in groups I or III; children of any of the four groups may result from unions containing a member of group IV and from unions of members of groups II and III.[6]

The facts here summarized have been confirmed in the United States and in Europe. In their medicolegal application, understanding of the mendelian theory is not necessary.[4] On the basis of the available evidence, it may be asserted that a study of blood agglutination groups cannot prove that a given man was the father of a given child, but that in some cases such a study can prove that a certain man could not possibly have been the father of a certain child.[5]

Current Comment

THE BIRDS FLOCK TOGETHER

Again Chicago has been visited by four conglomerations of peculiar practitioners. For some reason—and several likely ones suggest themselves—the Electronic Research Association, the American Association of Medico-Physical Research, the Auto-Hemic Practitioners and the American Association of Orificial Surgeons held their meetings at contiguous dates in this fair city. Stripped of verbal camouflage, these organizations are devoted to the disciples of Abramsism, of the extraordinary methods promoted by L. D. Rogers, and of the highly amusing view that most diseases can be relieved by stretching the body exits. There was a time when Chicago newspapers devoted columns of valuable space to the astounding theories and alleged discoveries promulgated at the sessions of these high-sounding societies. But editors, like many of the public, are becoming health-educated and wary. This time most of the news appeared in the form of a statement, somewhere between pages 8 and 16 of any of the Chicago daily newspapers, to the effect that such societies were meeting and that somebody was reading a paper on something. This, too, despite the vigorous efforts of specially employed publicity agents. Elsewhere in this issue appear the random impressions of a casual visitor at the sessions of the Electronic Research Association. The only comment necessary is a paraphrasing of the famous lines of Bret Harte:

> For ways that are dark,
> And tricks that are vain,
> The heathen M.D. is peculiar.

DECLINING FLOUR CONSUMPTION IN THE UNITED STATES

During the war, the reasons for a decline in wheat flour consumption in the United States were obvious. That this decline set in long before the war and has been accelerated since its close is not so well known. Recent study[1] of the problem in the Food Research Institute of Stanford University shows that the per capita consumption of flour remained fairly stable previous to 1904. From that time until 1919, however, flour consumption fell off 10 per cent, while from 1919 to 1923 it decreased nearly 12 per cent. The total disappearance in twenty-one years totals, accordingly, more than 21 per cent. In 1923 the United States used 26,800,000 barrels less flour than it would have consumed if the per capita consumption of 1904 had been continued. Analysis shows three fundamental forces at work. First, there has been a tendency to replace the cereals with sugar. Whether or not Volsteadism has had anything to do with this is uncertain. In large part, increased sugar consumption is probably the continuation of a change that has been in progress for twenty years or more. Second, the total per capita food requirement has declined, perhaps because there is more machine and office work and less manual labor than formerly. Third, along with greater prosperity of laborers since the war has come diversification of diet and increased consumption of more expensive foods. As a consequence, flour has been replaced to some extent by fruits, vegetables and dairy products. In the light of past events, a dependable prediction of future trends seems possible. The laborer of the years to come may or may not become increasingly prosperous; it seems likely that wages are near their peak. Further diversification of diet or decrease in the total food consumption may continue, but probably not at the recent accelerated rate. Increasing consumption of sugar, however, may make further inroads on the demand for flour, the extent of which cannot now be predicted. From both economic and nutritional standpoints it is important to ascertain the trends in food consumption of the next few years.

6. Ottenberg's article in THE JOURNAL, March 25, 1922, was accompanied by the following footnote:
To refresh the memories of readers, A and B are the substances in human red cells which make them susceptible to agglutination by the human serum agglutinins α and β.
The red cells of group I have neither A nor B.
The red cells of group II have A.
The red cells of group III have B.
The red cells of group IV have A and B.
The serum of group I has α and β.
The serum of group II has β.
The serum of group III has α.
The serum of group IV has neither α nor β.
The A B terminology here used is that of von Dungern and Hirschfeld. In many textbooks the A and B are reversed, the letter B being used for group II agglutinogen and the other letters changed accordingly. The final result is the same.

1. The Decline in Per Capita Consumption of Flour in the United States: Wheat Studies of the Food Research Institute, Stanford University **2**, no. 8 (July), 1926.

Association News

ABSTRACT OF MINUTES OF MEETING OF BOARD OF TRUSTEES, HELD IN CHICAGO, SEPT. 9 AND 10, 1926

The Board of Trustees of the American Medical Association met in Chicago, September 9 and 10. All members of the Board were present, including the President, President-Elect and the Speaker of the House of Delegates.

ELECTIONS

Dr. W. McKim Marriott of St. Louis was elected to succeed Dr. John Howland (deceased), and Dr. Treat B. Johnson of New Haven, Conn., was elected to succeed Dr. Francis W. Peabody (resigned) on the Council on Pharmacy and Chemistry.

COMMITTEE ON NURSES AND NURSE EDUCATION

In accordance with the terms of a resolution adopted by the House of Delegates at the Dallas Session, providing for the appointment of a committee on nurses and nurse education, the following committee was appointed: Drs. Nathan B. Van Etten, New York (chairman); W. E. Musgrave, San Francisco; Stewart R. Roberts, Atlanta, Ga.; C. W. Waggoner, Toledo, Ohio; Frank Billings, Chicago; H. M. Johnson, Dawson, Minn., and James R. Bloss, Huntington, W. Va. The committee will cooperate with any committee already in existence that is now engaged in a study of the subject of nurses' training.

REPRESENTATIVE IN WASHINGTON

The Secretary and General Manager was instructed to arrange for the presence of a representative in Washington during the sessions of Congress, for the purpose of keeping in touch with legislation and governmental rulings affecting the practice of medicine and the general interests of the medical profession.

COMMITTEE ON RELATIONS WITH OTHER ORGANIZATIONS

The committee on relations with other organizations—a standing committee of the Board of Trustees appointed in November, 1925—reported that it had not received any communications from other organizations, but that it stands ready to receive and consider any proposals that might be offered, looking to cooperation with the American Medical Association in the interest of the public health.

EXPERT OPINION EVIDENCE

The Secretary of the Association reported that he had communicated with the secretary of the American Bar Association, transmitting the resolutions adopted by the House of Delegates at Dallas with respect to expert opinion evidence, that the latter had acknowledged receipt of the notification, but that no further communication concerning the matter had been received. The Board of Trustees, deeming it advisable that the medical profession be represented in any action that may be taken with regard to this matter, instructed the Secretary of the Association to communicate further with the secretary of the American Bar Association, inquiring whether there is anything that the American Medical Association can do to be helpful in this matter.

PREPARATION OF LETTERS TO BE SENT TO LAYMEN

The House of Delegates at the Dallas Session adopted a resolution providing that the Board of Trustees prepare letters to be sent to laymen by the members of county medical societies, dealing with the importance of periodic physical examinations. As some county medical societies seem to feel that the use of such letters would be unethical, this matter was referred to the Judicial Council for an opinion.

COUNCIL ON PHYSICAL THERAPY

The Secretary and General Manager reported that the Council on Physical Therapy had held a third meeting; that additional committees had been appointed, and that rules had been prepared for final adoption. Papers and reports which will be prepared by committees of the Council will be published in THE JOURNAL in a column to be devoted to the work of this Council.

PRIZES FOR SCIENTIFIC WORK

The chairman of the Committee on Scientific Research reported to the Board that it had considered the question of the awarding of prizes for the accomplishment of distinguished scientific work in medicine or closely allied sciences, and requested that the Board decide whether or not such prizes should be awarded. It was the sense of the Board that prizes should not be awarded. The policy of making grants to be used in aiding scientific research will be continued.

MEMBERS OF THE BOARD OF TRUSTEES TO BE AVAILABLE FOR THE PURPOSE OF PROVIDING INFORMATION TO REFERENCE COMMITTEES OF HOUSE OF DELEGATES

The Board of Trustees expressed its desire to be of all possible service to reference committes of the House of Delegates. It therefore instructed its chairman to offer the services of members of the Board to all reference committees of the House of Delegates, that these committees might have such information concerning official reports and the general affairs of the Association as the Board of Trustees can provide. The chairman of the Board was made responsible for representation at committee hearings.

ADDITIONAL MEMBERS ON COMMITTEE TO COOPERATE WITH THE COMMISSIONER OF INTERNAL REVENUE AND THE SECRETARY OF THE TREASURY

Dr. Southgate Leigh of Virginia and Dr. Tom B. Throckmorton of Iowa were appointed to serve as members of the Committee to Cooperate with the Commissioner of Internal Revenue and the Secretary of the Treasury. This committee as now constituted is as follows: Drs. William H. Mayer, Pittsburgh (chairman); Alexander Lambert, New York; Paul D. White, Boston; Southgate Leigh, Norfolk, Va., and Tom B. Throckmorton, Des Moines, Iowa.

HOMES FOR DEPENDENT PHYSICIANS

The subject of the care of dependent physicians was considered by the Board and there was extensive discussion of the various questions involved. It was brought out in the discussion that a number of state medical associations already have so-called benevolence funds for the relief of dependent physicians, and that in some instances at least very few demands have been made on these funds. The President of the Association, Dr. Wendell C. Phillips, announced the appointment of a committee on a home for indigent physicians, provided for in a resolution adopted by the House of Delegates at Dallas. The personnel of this committee, as announced by the President, is as follows: Drs. George H. Simmons, Chicago (chairman); D. E. Sullivan, Concord, N. H.; Walter F. Donaldson, Pittsburgh; A. R. McComas, Sturgeon, Mo., and John A. Witherspoon, Nashville, Tenn.

The Board authorized the publication in the *A. M. A. Bulletin* of the statement describing the observations of the Benevolence Committee of the Medical Society of the State of Pennsylvania, prepared by Dr. E. B. Heckel, chairman of the Board.

ENDORSEMENT OF PROGRAM OF SEYMOUR COMMITTEE FOR PREVENTION OF DISEASE

The Board endorsed the program of the Seymour Committee, providing for an intensive campaign of education regarding the amount of sickness and loss of life from certain preventable diseases, such as diphtheria, smallpox and typhoid, and for a seasonal "drive" against each of these diseases.

DIAGNOSTIC CLINICS AT WASHINGTON SESSION

It was decided to extend the diagnostic clinic program at the Washington Session so that such clinics will be held on Monday and Tuesday of the week of the session. Heretofore diagnostic clinics have been held only on Monday.

APPRECIATION OF SERVICES OF DR. FRANCIS W. PEABODY

The resignation of Dr. Francis W. Peabody, for many years a member of the Council on Pharmacy and Chemistry, was

regretfully accepted by the Board, and the Secretary was instructed to send to Dr. Peabody an expression of appreciation of his splendid service and of regret that he had found it necessary to resign.

Reports of standing committees were received and acted on, and much routine business was transacted. Consideration was given to many matters under the head of unfinished business. Adjournment was taken until the regular fall meeting of the Board, which will be held in Chicago in November.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

COLORADO

Society News.—Dr. John B. Crouch, Colorado Springs, addressed the Northwestern Colorado Medical Society, Steamboat Springs, August 21, on "Differential Diagnosis of Chest Conditions," illustrated with roentgenograms. The president and president-elect of the state medical society, Drs. George A. Boyd and George H. Curfman, also addressed the society.

State Medical Election.—At the annual meeting of the Colorado Medical Association, Colorado Springs, Sept. 21-23, Dr. George H. Curfman, Salida, was elected president; Dr. William A. Sedwick, Denver, president-elect; Drs. William A. Kickland, Fort Collins, Harold T. Low, Pueblo, Hugh F. Lorimer, Towner, Colo., and John P. McDonough, Gunnison, vice presidents; Dr. Frank A. Stephenson, Denver, secretary, and Dr. Leo W. Bortree, Colorado Springs, treasurer.

CONNECTICUT

Personal.—Dr. William W. Peter, who for thirteen years has been engaged in health education work in China, has returned to the United States, with his family, to do postgraduate work in public health under a scholarship granted him by Yale University, New Haven, where he will be for the coming year.

Health at New Haven.—Telegraphic reports to the U. S. Department of Commerce from sixty-five cities with a total population of about 29,000,000 for the week ending September 18 indicate that the lowest death rate (6) was for New Haven, and that the death rate for the group of cities as a whole was 10.9. The death rate for New Haven for the corresponding week last year was 4.7, and for the group of cities, 10.8.

GEORGIA

Society News.—Dr. Theodore Toepel addressed the Fulton County Medical Society, Atlanta, September 2, on "Newer Treatment of Acute Poliomyelitis."——The Fulton County Medical Society, Atlanta, conducted a golf championship tournament between September 23 and October 2 at the Druid Hills Golf Club.——Dr. Daniel C. Elkin addressed the Medical Journal Club, Atlanta, September 29, on "Present Status of Thoracic Surgery"; Dr. William W. Anderson, "Review of Recent Advances in Pediatrics," and Dr. Champneys H. Holmes, "Practical Points in the Diagnosis of Pulmonary Diseases."

IDAHO

State Medical Election.—At the annual meeting of the Idaho State Medical Association, Sandpoint, September 2-5, Dr. Duncan L. Alexander, Twin Falls, was elected president; Dr. Alexander Barclay, Coeur d'Alene, vice president, and Dr. Joseph N. Davis, Kimberly, secretary-treasurer, reelected.

ILLINOIS

Floods Increase Typhoid.—Private and public water supplies subjected to pollution in the recent floods in parts of Illinois have contributed to the spread of typhoid, which, September 22, had reached the highest level of the year. The state health director, Dr. Isaac D. Rawlings, urges that all water supplies be guarded with the greatest vigilance during and after the floods, and that private sources of water subjected to flood conditions be boiled before drinking.

Personal.—Dr. Albert Merrill Miller has been appointed to the newly created position of consulting surgeon at the Soldiers' Home, Danville.——Dr. Ernest Donald has been appointed city health physician of Marseilles.——Dr. Earl B. Miller, formerly of the Veterans' Bureau Hospital at Fort Lyon, Colo., became superintendent of Elmgrove Sanitarium, Bushnell, Ill., September 2; this sanatorium is the McDonough County tuberculosis hospital.——Dr. Willard P. Earngey, Rockford, has been appointed county physician to succeed Dr. Clarence H. Boswell, resigned, who held the position for nine years.——Dr. Samuel E. Parr, Ottawa, has been elected county physician.

Liquor Licenses Revoked.—The district prohibition administrator with headquarters in Chicago recently issued orders revoking the liquor licenses of the following, it is reported, for the reasons indicated.

Dr. Seth E. Brown, Evanston, failed to keep accurate records, issued prescriptions unlawfully, knowingly conspired to divert nonbeverage liquor to beverage purposes.
Dr. Ralph P. Dowd, Fisher, Ill., improper use of emergency prescriptions.
Dr. Louis R. Fletcher, Evanston, failed to keep proper records, issued prescriptions unlawfully, conspired to divert nonbeverage liquor to beverage purposes.
Dr. Samuel Watson, Alton, issued prescriptions for same patients within ten days.

Chicago

Annual Dinner.—The annual dinner of the Chicago Medical Society will be at the Hotel La Salle, Wednesday, October 13; there will be a reception to the president and guests at 6 o'clock; dinner, 6:30, and the installation of officers, 7:30. Dr. Max Mason, president, University of Chicago, will give the principal address at 8 o'clock; Dr. Morris Fishbein will be toastmaster; there will be dancing and cards; informal; tickets $3.

Award of Willard Gibbs Medal.—The Chicago Section of the American Chemical Society awarded the Willard Gibbs Medal for 1926 to Sir James Colquhoun Irvine, September 17, who gave an address on "Progress in the Structure Study of Carbohydrates." The recent work of Sir James who is principal and vice chancellor of the University of St. Andrews, Edinburgh, Scotland, has been acknowledged as a classic in carbohydrate chemistry. He has, on several occasions, been invited to this country to lecture, notably at the dedication of the Sterling Chemical Laboratory, Yale University, in 1923; he participated in a series of lectures at Columbia University this summer and last month gave six lectures at Williamstown, which was a feature of the Institute of World Politics.

Liquor Licenses Revoked.—The local prohibition administrator recently issued orders revoking the liquor licenses of the following, it is reported, for the reasons indicated:

Dr. Maxwell P. Borovsky, failed to keep proper records, issued prescriptions in an unlawful manner; conspired to divert liquor from nonbeverage purposes to beverage purposes.
Dr. Dosu Doseff, failed to keep proper records; issued prescriptions in an unlawful manner; knowingly diverted nonbeverage liquor to beverage purposes.
Dr. Anna R. Manitoff, failed to keep proper records, issued prescriptions unlawfully, failed to exercise care in issuance of prescriptions.
Dr. LeRoy McLaughlin, failed to keep proper records, issued prescriptions unlawfully.
Dr. Henry J. Millstone, failed to keep proper records, issued prescriptions unlawfully.
Dr. Edgar A. Peck, failed to keep true records, issued prescriptions unlawfully, conspired to divert nonbeverage liquor to beverage purposes.
Dr. Henry E. Wagner, failed to keep proper records, issued prescriptions unlawfully, knowingly diverted nonbeverage liquor to beverage purposes.

Unlicensed Practitioners in the Loop.—The Illinois state department of registration and education issued warrants, September 27, for the arrest of twenty unlicensed chiropractors and naprapaths on a charge of practicing without a license. Warrants were issued for the following, it is reported:

"Dr." Jennie Bowman, 162 North State Street.
"Dr." J. Francis Doherty, 159 North State Street.
"Dr." Edward Edwards, 159 North State Street.
"Dr." R. H. Eifert, 159 North State Street.
"Dr." Lester Gill, 159 North State Street.
"Dr." Olive K. Harvey, 159 North State Street.
"Dr." H. A. Hofemeister, 159 North State Street.
"Dr." Carle Hoye, 159 North State Street.
"Dr." LaVerne R. Jones, 159 North State Street.
"Dr." Earl Kahn, 159 North State Street.
"Dr." C. E. Kerrick, 159 North State Street.
"Dr." John E. Knechtel, 162 North State Street.
"Dr." Charles Lamon, 159 North State Street.
"Dr." Fred Lange, 159 North State Street.
"Dr." H. W. Riley, 159 North State Street.
"Dr." A. G. Schlesinger, 159 North State Street.
"Dr." Earl Williams, 159 North State Street.
"Dr." Helen Woodgate, 108 North State Street.
"Dr." A. D. Yancey, 108 North State Street.
"Dr." Lenora M. Yates, 159 North State Street.

Society News.—Dr. Ralph Pemberton, Philadelphia, will address a joint meeting of the Chicago Orthopedic Club and the north side branch of the Chicago Medical Society, October 7, Webster Hotel, on "Certain Phases of Arthritis"; the discussion will be opened by Drs. Billings, Preble, Post, David J. Davis, Mayers, Miller, Rosenow and Potter; for dinner reservations, telephone Dr. Francis L. Lederer, Dearborn 9435.——Dr. H. Gideon Wells will address the Englewood branch, Chicago Medical Society, October 5, on "Cancer Statistics," and Dr. Peter Bassoe, on "Neurosyphilis."——The Chicago Society of Industrial Medicine and Surgery will meet, October 4, Great Northern Hotel; Dr. Philip H. Kreuscher will speak on "Practical Consideration of the Commoner Types of Back Injuries."——Dr. Mary M. Harper addressed the Chicago Council of Medical Women, Hotel Sherman, October 1, on "Leprosy in the Orient."——The annual dinner of the Chicago Surgical Society was held at the University Club, October 1; Dr. Arthur Dean Bevan spoke on "Contributions of Chicago Surgeons to the Development of Intestinal Surgery"; Dr. Weller Van Hook, "Editorials on Surgical Progress," and Dr. Malcolm T. MacEachern, on "A Journey to the Antipodes," illustrated.——Dr. Jabez N. Jackson, Kansas City, Mo., President-elect of the American Medical Association, will be the guest of the Chicago Medical Society, October 20, and will present a paper on "Physiologic Considerations in Abdominal Surgery."

INDIANA

Personal.—Dr. Ulis B. Hine, Indianapolis, has been appointed chief deputy coroner, it is reported, to succeed Dr. William A. Doeppers, who resigned to become superintendent of the city hospital.

Report of Bureau of Publicity.—The report of the bureau of publicity to the house of delegates of the Indiana State Medical Association gives a list of subjects that have been released to the newspapers in the last year; those which proved most popular and which were most widely printed are (1) High Blood Pressure; (2) Germs; (3) Shock Troops Against Disease; (4) High School Basketball and Health; (5) Eye Strain; (6) Goiter and Iodine; (7) The High Cost of Colds; (8) Spring Fever; (9) Rabies; (10) Antiseptic Surgery; (11) Chiggers, and (12) Sanity of the Fourth. The report contains a long list of meetings of various clubs, medical societies, parent-teacher associations for which the bureau supplied speakers, and a quotation from the Dallas speech of the President of the American Medical Association with regard to public health education, and another from an editorial on the same subject from the *Saturday Evening Post*. The report notes that other state medical societies have taken up the publicity work on a plan similar to that used in Indiana, notably Wisconsin and West Virginia; also the Toledo Academy of Medicine.

IOWA

Angina Pectoris in the Young.—The state department of health of Iowa has forwarded a "survey of deaths from diseases of the heart" for 1925, with the rates prepared by age group and sex. It is of interest to note that one death due to angina pectoris was reported in the age group 5 to 9 years; one in the age group 10 to 14 years, and one in the age group 20 to 24 years.

Society News.—The Woodbury County Medical Society held a symposium on "Influenza," September 14; Dr. Allen C. Starry discussed "Pathology of Influenza"; Dr. William D. Runyon, "Etiology and Symptomatology of Influenza"; Dr. Charles C. Yancey, "Diagnosis and Treatment of Influenza," and Dr. Leroy R. Tripp, "Nose and Throat Involvement in Influenza."

KENTUCKY

Smallpox Epidemic.—An outbreak of fifty-five cases of smallpox with two deaths was reported from the Horse Branch section of Ohio County, September 18; the outbreak is said to have started three weeks previously. In an effort to prevent the further spread of smallpox, attendance at all public meetings in the affected area have been prohibited, it is reported.

Guest Speakers at State Meeting.—At the seventy-sixth annual meeting of the Kentucky State Medical Association, Frankfort, September 20-23, the guest speakers included Dr. Basil M. Taylor, Portland, Ind., "Practical Infant Feeding"; Dr. Joel E. Goldthwait, Boston, "The Chronic Patient" and "Backache"; Dr. James S. Speed, Memphis, Tenn., "Reconstruction Operations on the Hip."

Action of Council on Violation of Liquor Law.—The report of the council to the house of delegates of the Kentucky State Medical Association, published in the September *Kentucky Medical Journal*, makes the following reference to violation of the federal prohibition law:

> The Council is informed that the federal authorities are now making a check of prescriptions for alcoholic beverages and it is astounded at the information that it is finding the names of prominent physicians signed to prescriptions containing the names of people whom they have not only not examined, but it has frequently been found that they have been out of town at the time of issuance of prescriptions, and that in numerous instances these prescriptions were filled for the physicians themselves. Such a procedure is absolutely inexcusable, and any member of our profession who prostitutes the privilege conferred on him by law, to secure whisky or other alcoholic beverages for social or other illegal purposes, deserves no sympathy when he is indicted, fined and imprisoned. The council, acting under your repeated instructions, will continue to prefer charges, looking to the revocation of the right to practice medicine in the state of every physician found guilty in the state or federal court of the violation of either the Harrison or Volstead Act. It desires to repeat again that the officials charged with the enforcement of these laws cannot relax in their strict construction of the provisions which seem most to us unnecessary, until the people have been protected from the class of negligent or soft-headed and soft-hearted physicians who pander to this trade and practice in violation of the law.

LOUISIANA

Hospital News.—About $3,000 was raised for Charity Hospital, New Orleans, at a lawn party, September 16; a feature of the party was the country store conducted by St. Margaret's Daughters; music was furnished by the police band. The funds raised will be used for general relief work.

Personal.—Dr. Herbert R. Unsworth has accepted an appointment in the neuropsychiatric division of St. Elizabeth's Hospital, Washington, D. C., for one year, it is reported.——Dr. Oscar Dowling, president, state board of health, who has been in the Canal Zone for several weeks, will return early in October.

Society News.—The physicians of Donaldsonville entertained the LaFourche Valley Medical Society, August 11, at the Elks Home at a banquet; there were addresses by Dr. Irwin J. Boulet, New Orleans, on "Ectopic Pregnancy," and by Dr. Henry A. Folse on "Amebic Dysentery"; the next meeting will be at Lockport.——Physicians at Abbeville entertained the Third District Medical Society recently at a banquet; Dr. Grover C. McKinney, Lake Charles, gave an address on "The General Practitioner and the Roentgen Ray."

Dr. Buffington Appointed Professor of Ophthalmology.—According to the *American Journal of Ophthalmology*, Dr. Wiley R. Buffington, New Orleans, has been chosen to fill the place made vacant by the death of Dr. Marcus Feingold, who was professor of ophthalmology in Tulane University of Louisiana School of Medicine. Dr. Buffington has resigned his professorship in ophthalmology in the graduate medical school of Tulane University and his position as assistant surgeon in the Eye, Ear, Nose and Throat Hospital, New Orleans, and is reorganizing the eye clinic in Charity Hospital preparatory to beginning teaching this winter.

MICHIGAN

State Medical Election.—At the annual meeting of the Michigan State Medical Society, Lansing, September 14-17, Dr. John B. Jackson, Kalamazoo, was elected president; Drs. Earl I. Carr, Lansing, William J. Cassidy, Detroit, Arthur F. Fischer, Hancock, and James J. Haviland, Owosso, vice presidents, and William K. West, Painesdale, speaker of the house of delegates.

Personal.—Dr. Myrton S. Chambers, Flint, has resigned from the city health department to engage in private practice, and will be succeeded by Dr. Frank D. Johnson.——Dr. William G. Ferguson, state psychopathic hospital, Ann Arbor, has been awarded a fellowship in neuropsychiatry provided jointly by the Commonwealth Fund, New York, and the Graduate School of Medicine of the University of Pennsylvania.——Dr. Ernest A. Cook, Fenton, has been appointed assistant physician in the public schools of Pontiac.

MINNESOTA

Society News.—The Southern Minnesota Medical Association will meet at Mankato, October 18, under the presidency of Dr. Frederick R. Huxley, Faribault. Dr. Herman M. Johnson, president, Minnesota State Medical Association, Dr. William T. Coughlin, St. Louis, and Dr. Hiram Winnett Orr, Lincoln, Neb., will speak at the banquet; among other scientific presentations will be a symposium on surgery of the sympathetic nervous system in the treatment of vascular

disturbances by Drs. Edward W. Andrews, Chicago, Alfred W. Adson and George E. Brown, both of Rochester, Minn. Dr. William J. Mayo, Rochester, will discuss "Cancer Problems"; Dr. Robert C. Coffey, Portland, Ore., "Surgical Treatment of Gastric and Duodenal Ulcer," and Drs. Alphonse E. Sohmer and Hiram J. Lloyd, both of Mankato, "Clinical Demonstrations of Cases of Diabetes Mellitus."

MISSOURI

Personal.—Dr. R. E. Ferguson, Elmo, has been appointed assistant superintendent at the Woodson Sanitarium, St. Joseph. ——Acting Asst. Surg. William C. Plumlee, U. S. Public Health Service, has been assigned to duty at the trachoma hospital, Rolla.

Society News.—The Buchanan County Medical Society held its annual chicken dinner, September 1, at the Woodson Sanitarium, St. Joseph.—Drs. Emmett P. North and Edward J. Goodwin, president and secretary, respectively, of the state medical association, met with the Cass County Medical Society, Pleasant Hill, September 9; Dr. M. A. Hanna spoke on "Modern Obstetric Procedures."

Referendum on Workmen's Compensation Act.—Missouri will conduct a referendum at the general election in November on the workmen's compensation act that was passed by the general assembly in 1925. The operation of the law has been suspended by this referendum. Missouri is said to be one of only six states without the benefits of the workmen's compensation law. According to the state medical journal, the law passed in 1925 is acceptable to the medical profession.

NEW YORK

Decrease in Measles Mortality.—While the number of cases of measles reported in the first six months of the year in up-state New York was greater than for the same period in any previous year, the number of deaths was smaller than for the corresponding period of any previous epidemic year. There were 191 deaths during the six months, as compared with 273 in the same period of 1923, the last measles year in New York. The state health commissioner ascribes the low mortality chiefly to the fact that no fatal epidemic in institutions for children occurred. This, it is said, was due to the care taken to guard these institutions and to efficient medical and nursing care; another factor has been the public interest in measles and the emphasis placed by the health departments on the necessity for prompt and adequate medical attention.

Medical School Opens with Scientific Conference.—The trustees and faculty of the School of Medicine and Dentistry of the University of Rochester have issued invitations to a scientific conference, October 25-26, which will mark the opening of the school. John C. Merriam, president, Carnegie Institution, Washington, D. C., will address a public meeting; Dr. Ludvig Hektoen, Rush Medical College, Chicago, will read a paper on "Recent Investigations in Scarlet Fever, Measles and Tuberculosis"; Dr. Joseph Erlanger, St. Louis, "Analysis of the Action Current of the Nerve," and Prof. Friedrich Müller, Munich, will speak in the evening on "The General Pathology of Joint Diseases"; Dr. Theobald Smith, Tuesday morning, will read a paper on "Immunity, Natural and Acquired as Illustrated by Experiments with Bacillus Coli and Its Mutants," and Dr. Lewis H. Weed, Baltimore, on "Problem of the Relation of the Muscle and Nerve." Professor Müller will conduct a medical clinic Tuesday evening and Dr. Harvey Cushing, Harvard Medical School, Boston, a surgical clinic.

Cattaraugus County Society Disapproves "Health Demonstration."—At a meeting, September 7, at Olean, the Cattaraugus County Medical Society discussed the activities of the health demonstration being conducted in that county by the Milbank Fund. The majority of physicians in the county feel, it is reported, that the work as conducted is in competition with them and borders on state medicine. Individual members of the medical society at this meeting are said to have stated that (1) school children were being examined by nurses instead of regular physicians; (2) nurses were prescribing for people in many cases; (3) many well-to-do people attended free chest and eye clinics; (4) doctors were not consulted regarding the proposed programs of the fund; (5) in the program for administration of toxin-antitoxin the doctors were left out, and toxin-antitoxin was administered free at clinics regardless of the circumstances of the people. The work of the demonstration was defended in this discussion by the county health officer, who is head of the Milbank demonstration and who stated that the same program was being followed in the large cities. Resolutions were adopted to the effect that (1) it is a sentiment of this society that it does not approve of the work of the Milbank Fund and the county board of health as carried on at present and that any program that they desire to conduct with the support of the county medical society shall first be submitted to the society and approved; (2) the public health committee of the county medical society shall submit the different programs of the Milbank demonstration and the county board of health to the society for approval before any action is taken, and (3) all programs that are approved by the county medical society should receive the unanimous support of its members.

New York City

Bequest to Home for Incurables.—One million dollars was bequeathed to the Home for Incurables, Third Avenue and One Hundred Eighty-First Street, by the will of Mrs. Annie C. Kane, on condition that part of the funds be used to erect a building for the treatment of incurable cases of cancer; Mrs. Kane was the daughter of the late William C. Schermerhorn, and her husband was a great grandchild of the first John Jacob Astor.

Community Celebration.—The community surrounding the new medical center which is being erected at Broadway and One Hundred and Sixty-Eighth Street held a fête, September 25, on the grounds of the medical center to acquaint the neighbors with the progress that has been made toward completion of this project. The celebration was under the auspices of the Uptown Medical Center Association; there was dancing in tents erected for the occasion, vaudeville, and speeches by distinguished citizens. The price of admission was 10 cents, and nothing was sold in the booths for more than that amount. Guides escorted the guests through the medical buildings.

Testimonial to Dr. Park.—The friends of Dr. William H. Park in this country and abroad desire to present a testimonial of their regard and recognition of his service to humanity; they have planned to have his portrait painted and placed in the New York Academy of Medicine. The portrait will cost $5,000, and the "Park Portrait Fund" bank account has been opened. Those desiring to contribute any amount whatever to this fund in keeping with the spirit of the gift should send their contribution to Dr. Annis E. Thomson, treasurer of the fund, New York University Medical College, 338 East Twenty-Sixth Street. A booklet containing the names of the contributors will be given to Dr. Park. The chairman of the committee is Dr. Rowland G. Freeman.

University News.—Columbia University began its one hundred and seventy-third academic year, September 22, with many departments, notably the school of medicine and Columbia College, taxed to capacity. Applicants for admission in the school of medicine, it is reported, greatly exceeded the accommodations. Dean William Darrach presided at the opening exercises of the medical school, and Dr. Frederick P. Gay, professor of bacteriology, gave the annual address, on "The Medical Sciences." Among the new professors in the school of medicine are Dr. Benjamin P. Watson of the University of Edinburgh, who becomes head of the department of obstetrics and gynecology, and Dr. Joseph G. Hopkins, who becomes head of the department of dermatology.

Children Killed in New York Streets.—The *Bulletin* of the City Club of New York has made public statistics to the effect that 555 persons were killed by automobiles in this city between January 1 and September 1, among whom were 238 children under 15 years of age; 132 of them were between 5 and 10 years of age; fifty-four were from 10 to 15, and fifty-two less than 5 years of age. The report says that "this is municipal murder, because the city can, but does not, scatter the clustered skyscrapers to whose appetites the motor cars minister; because the city can, but does not, regulate the roaring motor monsters as they speed through narrow streets filled with children at play; because the city can, but does not, establish more and still more parks and playgrounds where children may play in safety instead of being entirely confined to the motor-thronged streets; because the city can, but does not, do something about it."

NORTH CAROLINA

Report of Orthopedic Hospital.—The annual report of the North Carolina Orthopedic Hospital (Gastonia) for the year ending July 1, 1926, shows that the institution cared for 329 children; 237 were dismissed improved; there was one death; two were dismissed unimproved, and six though admitted were not treated; 562 operations were performed with 1,701

minor procedures, and 469 roentgenograms were made. More than $2,000 in donations was received, and much interest was manifested by the public in the work of the institution. The average daily cost per child was $2.89 for care and treatment. At the hospital clinics, examinations were made of 858 children during the year, of which 254 were new cases and 603 old cases. In the ten regional clinics held throughout the state, 534 children were examined.

OHIO

Personal.—Dr. Nancy E. Finney, Cedarville, has been appointed resident physician at Western College for Women, Oxford.——Dr. Douglas Boyd, Jr., has been appointed demonstrator of orthopedic surgery for one year at Western Reserve University Medical School, Cleveland; Dr. Mary Benechek, Hanna research fellow in pathology for one year, and Dr. William K. Strother, Jr., demonstrator of obstetrics for one year.

Great Increase in Deaths from Measles.—During the first six months of this year, 750 deaths from measles were reported to the state department of health, as compared with thirty-three deaths from measles reported in the same period in 1925. There were also 1,020 more deaths reported from heart disease than in the corresponding period last year. One person died every six minutes in Ohio during this period, or 228 persons every day. There were 2,252 fewer births than there were in the first six months of 1925.

PENNSYLVANIA

Typhoid at State Hospital.—An outbreak of twenty-one cases of typhoid was reported among the attendants of the Dixmont State Hospital for the Insane, September 16. None of the patients had contracted typhoid. The outbreak among the attendants was thought to be due to bathing in the Ohio River.

Research on Surgical Supplies.—The Mellon Institute of Industrial Research, University of Pittsburgh, announces that Johnson and Johnson, manufacturer of surgical supplies, New Brunswick, N. J., has established at the institute a fellowship for the study of the exact requirements of surgeons and other medical specialists in the way of sundries, with the aim of developing new supplies that are needed and of standardizing the products now in use. An investigation will be made of the processes of renovating used supplies, and other fellowships of the institute will cooperate in devising satisfactory procedures. Dr. Frederic H. Slayton, Wichita, Kan., will be in direct charge of this research. The fellowship will be administered in a totally unbiased and independent manner, in accordance with the Mellon Institute system, and all investigations will be conducted primarily for the benefit of the public. The results will be reported in appropriate periodicals as various phases of the studies are concluded. In carrying on this work, the concurrence of all interested organizations, and especially the close collaboration of hospital executives and of members of the medical profession, is requested.

Society News.—The Tri-County Medical Society will hold its 1927 meeting in Harrisburg; at the last meeting, in Lebanon, Dr. George L. Laverty was elected president, and Dr. Josiah F. Reed, secretary-treasurer.——Dr. Charles H. Mayo, Rochester, Minn., addressed a special meeting of the Harrisburg Academy of Medicine, September 18, at the Penn-Harris Hotel, on "Sugar, Teeth and Infections."——The Dauphin County Medical Society will conduct a symposium, October 5, on "Recent Advances in Medicine"; Dr. George R. Moffitt will speak on "Blood Chemistry"; Dr. Josiah F. Reed, "The Rubin Test," and Dr. Allen Z. Ritzman on "Roentgen Ray of the Gallbladder."——In his official report to the house of delegates of the state society, the councilor of the fifth district notes that Dr. Joseph M. Corson, Hughesville, was elected secretary-emeritus of the West Branch Medical Association, August 4, after twenty-eight years' service as secretary; Dr. Corson now is disabled as the result of a long illness.——Prof. R. A. Dutcher of State College addressed the West Branch Medical Association, August 4, at the Center Hills Country Club on "Vitamins," and Dr. Thomas G. Simonton, Pittsburgh, on "Gastro-Enteroptosis."——The reports of the councilors of the state medical society to the house of delegates as published in the *Atlantic Medical Journal* give an idea of the great amount of effort put into organized medicine in Pennsylvania and form an interesting survey of the work of the councilors in the last year.——Dr. John M. Thorne, Pittsburgh, addressed the McKeesport Academy of Medicine, August 3, on "The New Pharmacopeia," and Dr. David C. Huffman, McKeesport, on "Medicine in the Past."

Philadelphia

Professor of Pediatrics Appointed.—Dr. Edward L. Bauer, Philadelphia, has been appointed professor of diseases of children at Jefferson Medical College to succeed Dr. Edwin E. Graham, resigned. For eight years, Dr. Bauer has been in charge of diphtheria prevention work under the auspices of the city department of health.

Personal.—Dr. Raymond W. Waggoner, orthopedic hospital, Philadelphia, has been awarded a fellowship in neuropsychiatry provided jointly by the Commonwealth Fund of New York and the Graduate School of Medicine of the University of Pennsylvania. ——Dr. David L. Drabkin, for two years a fellow of the National Research Council at Yale University, has been appointed an instructor in biochemistry at the University of Pennsylvania.

Millions for the Health Department.—The city council has passed ordinances appropriating $2,000,000 for the health department, in which is included an appropriation of $750,000 for a new administration building for the Philadelphia General Hospital, and $1,250,000 for improvements at the city hospitals in which was included $450,000 for a nurses' home at the Philadelphia General Hospital, and an equal amount for a nurses' home at the institution for the feebleminded. Included were also appropriations to improve the sanitation at the hospitals and for various other buildings.

Society News.—Dr. Foster Kennedy, New York, addressed the Philadelphia College of Physicians, September 27, on "Encephalitis."——In his address before the Philadelphia County Medical Society, Dr. Carey J. Vaux, director of health of Pittsburgh, is reported to have said that deaths from pneumonia in Pittsburgh decreased 26.5 per cent during 1925, the first full year in which pneumonia cases were quarantined, and that during the present year the death rate has been reduced still further.——Dr. P. Brooke Bland, Philadelphia, delivered the opening address at Jefferson Medical College, September 22, on "Some Fundamental Guides of Life."

Talks for the Public.—The Philadelphia County Medical Society has arranged for health talks for the public to be given every Tuesday evening in the auditorium of its new building, Twenty-First and Spruce streets. The subjects and speakers announced are as follows:

"Genius, Talent and Health," Dr. Charles W. Burr, October 5.
"Hints on Heart Health," Dr. Samuel Calvin Smith, October 19.
"The Great Scourge—Syphilis," Dr. Jay F. Schamberg, October 26.
"Aids to Growing Old Gracefully," Dr. James M. Anders, November 9.
"How to Keep Sane" (contingent), Dr. Daniel J. McCarthy, November 16.
"Periodic Health Examinations" (contingent), Hon. Herbert Hoover, November 23.
"How to Prevent and What to Do for Cancer," Dr. George E. Pfahler, November 30.
"How to Prevent Cancer and How to Recognize Early Cancer by Periodic Examination," Dr. Francis A. Faught, November 30.
"Early Signs and Early Treatment of Internal Cancer," Dr. P. Brooke Bland, November 30.
"Contagious Diseases, Their Prevention and Cure," Drs. Samuel S. Woody, Walter S. Cornell and Andrew A. Cairns, December 7.
"How to Keep Your Sugar Normal With and Without Insulin," Dr. Orlando H. Petty, December 14.

SOUTH DAKOTA

Resolution About Laymen as Health Officers.—The board of councilors of the South Dakota State Medical Association recently adopted a resolution to the effect that the state association believes that all positions of trust pertaining to public health in any community should be held by doctors of medicine and not by laymen holding D.P.H. "licenses," and that it views with displeasure any move of the part of the American Public Health Association which may express a desire to replace physicians as health officials by laymen with D.P.H. "licenses." It was resolved further to send a copy of the resolution among other places to all institutions of learning where courses in public health will be given with a view to conferring a D.P.H. degree on laymen.

TENNESSEE

Dr. Graves Retires.—Dr. Thomas C. Graves, Memphis, for about fifteen years superintendent of the Shelby County health department, retired, October 1, it is reported, to devote his time to private practice, and was succeeded by Dr. Lloyd M. Graves of Franklin.

Better Family Contest.—The Eugenic Society of America, cooperating with the extension service of the University of

Tennessee and the Johnson City Health Department, will conduct a better family contest at the East Tennessee Division Fair this year. Parents and children entering the contest will be given physical examinations and a copy of the score card with advice for correction of physical defects found.

Society News.—At the annual meeting of the East Tennessee Medical Association, Morristown, recently, Dr. Horace G. Pangle, Russellville, was elected president; Dr. George J. Sells, Johnson City, and Dr. James L. Proudfoot, Athens, vice presidents, and Dr. Jesse C. Hill, Knoxville, secretary-treasurer.——Dr. John A. Witherspoon spoke on "The Origin of the Maury County Medical Society" at the recent celebration of its thirty-sixth anniversary, Columbia. The other charter members present were Drs. Robert Pillow, Kirby S. Howlett and William K. Sheddin.

TEXAS

State Sanitary Squad.—The sanitary squad of the state board of health made sanitary surveys in seventeen Texas cities during the summer, all of which were made at the instance of local officials, and with the cooperation of city commissioners, health officials, civic clubs and business organizations. The work at each place included observations for such sanitary defects as mosquito and fly breeding places, cess pools, improperly constructed septic tanks, insanitary closets, contaminated wells and defective plumbing. The squad comprised from six to ten men, who are graduate engineers and medical students. Some of the municipalities have already employed full-time sanitarians since the survey was made, and others have employed sanitarians temporarily to carry out recommendations made by the squad. The towns surveyed were: Austin, Manor, Elgin, Cleburne, Lufkin, Jacksonville, Fredericksburg, Kerrville, Lampasas, Rockwall, Royse City, Taylor, Georgetown, Richmond, New Braunfels, La Grange and Schulenberg.

WISCONSIN

Personal.—Dr. Thomas L. Byrd, Milwaukee, has resigned as clinical director of laboratories, Sacred Heart Sanitarium and St. Mary's Hill, to accept the appointment as Jacques Loeb Fellow in Medicine, Johns Hopkins Hospital, Baltimore.

Hygeia for Legislators.—The house of delegates of the State Medical Society of Wisconsin at the recent Madison meeting appropriated $500 for the purpose of providing *Hygeia*, the Health Magazine, published by the American Medical Association, for the legislators and government heads.

Society News.—Dr. Joseph F. Smith, president of the state medical society, addressed the Barron-Polk-Washburn-Sawyer-Burnett County Medical Society, Rice Lake, August 24, on "Periodic Examination of Apparently Healthy Persons." There was also a banquet attended by physicians and their wives.——The Winnebago County Medical Society, Omro, was recently addressed by Dr. Frank Gregory Connell, Oshkosh, on "Periodic Health Examinations," and by Dr. Clarendon J. Combs, Oshkosh, on "Diagnosis of Abdominal Conditions."

Summary of State Meeting.—At the eighty-fifth annual meeting of the State Medical Society of Wisconsin, Madison, September 14-17, Dr. Arthur W. Rogers, Oconomowoc, was elected president for 1926, and Dr. John J. McGovern, Milwaukee, president-elect. The next annual meeting will be at Eau Claire. Drs. John M. Dodd, Ashland, and Horace M. Brown, Milwaukee, were elected delegates to the American Medical Association. This was a record meeting for attendance outside Milwaukee and equal to the largest meeting held in that city. Among other things, the house of delegates (1) directed a special committee to investigate the nursing question and report at the next session; (2) endorsed the periodic examinations of apparently healthy persons by their family physicians; (3) commended the state board of medical examiners for their recently announced policy to secure law enforcement (THE JOURNAL, September 25, p. 1045); (4) appropriated $2,000 to the Committee on Public Policy to enable it to present to the legislature the opinion of the profession on all questions respecting public health, medical practice and licensure, and specially directed the committee to urge before the legislature that the licensure for itinerants be abolished; that physicians from foreign countries be required to have first citizenship papers before being licensed; that conviction and sentence to state prison for criminal abortion automatically revoke the physician's license, and that there be no change in the Basic Science Act. The house of delegates adopted a new constitution and by-laws, providing, among other things, that the office of president-elect, speaker and vice speaker be created. Dr. Karl W. Doege was elected speaker for 1927; the dues for next year were fixed at $10.

GENERAL

New Director of Laboratory at Woods Hole.—Merkel H. Jacobs, Ph.D., University of Pennsylvania School of Medicine, has been elected director of the Marine Biological Laboratory, Woods Hole, Mass., to succeed Frank R. Lillie, Ph.D., professor of embryology and chairman of the department of zoology, University of Chicago, resigned. Dr. Lillie has been director since 1908; he will remain president of the board of trustees.

Directory of State Health Officers and Appropriations.—The U. S. Public Health Service publishes in *Public Health Reports*, August 27, its annual directory of state and insular health authorities of the United States together with the funds appropriated for each bureau in each state. The personnel of the state departments of health is given, and those on full-time indicated. The directory has been published annually since 1912.

Personal.—Mr. George Murnane, vice president of the New York Trust Company, has been elected president of the American Association for Medical Progress, to succeed Mr. Thomas Barbour, director, Museum of Comparative Zoology, Harvard University. Mr. Murnane, during the World War, was deputy commissioner of the American Red Cross in Europe. The headquarters of the American Association for Medical Progress are at 370 Seventh Avenue, New York.

Study of Chlorine Gassing.—The board of medical officers appointed by the director of the U. S. Veterans' Bureau to study the residual effects of war gas expects to complete its study of chlorine gassing by the first of the year. The records show that 1,843 casualties were due to chlorine gas during the World War, and that the total of gas casualties was about 70,000. On completion of the investigation of chlorine gassing, the board will undertake a survey of cases resulting from phosgene, mustard and other gases.

Epidemic of Influenza at Samoa.—A radio dispatch to the Navy Department from Capt. H. F. Bryan, U. S. Navy (retired), governor of Samoa Island, announced that the influenza epidemic which broke out there several weeks ago has abated. Quarantine restrictions placed on the naval station at the island have been removed. Previous reports were to the effect that fifty members of the naval personnel at Samoa had become affected with influenza. The epidemic spread to villages on the island, including Pago Pago, Laulii and Nuuli on the southern coast, and Afono and Fagaitua on the north coast of Tutuila. No deaths were reported.

Automobile Deaths in Four Weeks.—The department of commerce announces that reports from seventy-eight large cities in the United States for the four weeks ending September 11 indicate that 560 persons were killed by automobiles in these cities, as compared with 521 for the corresponding four weeks of 1925; five cities showed no automobile fatalities for the last four weeks: Kansas City, Kan.; Lynn, Mass.; Paterson, N. J.; Somerville, Mass., and Yonkers, N. Y. In a series of four-week periods beginning May 23, 1925, and ending Sept. 11, 1926, the total number of automobile fatalities reported in this group of seventy-eight cities was 8,908.

Census of Mental Hospitals.—The census of hospitals for mental disease, conducted by the U. S. Census Bureau, is ready for distribution; it includes resident patients, Jan 1, 1923, and admissions, discharges and deaths for 1922, and is said to be the most comprehensive study of these hospitals ever made. The institutions included numbered 526, of which 165 are state hospitals, 148 other public hospitals and 213 private hospitals. The resident patients totaled 267,617; during the year, there were 52,777 patients discharged, 11,935 of whom were reported "recovered," and 4,943 as "without psychosis." The census bureau was assisted in this census by the National Committee for Mental Hygiene.

Red Cross Convention.—The sixth annual convention of the American National Red Cross will be held in Washington, D. C., October 4-7. The program this year will emphasize the round table discussion rather than the general session. President Coolidge will address the only evening session at Continental Memorial Hall, October 4; Wednesday morning will be given over to discussion of "disaster relief" and the

"coming roll call campaign." Tuesday will be devoted wholly to round table discussions; one group will devote the morning to the health activities of the Red Cross—public health, nursing, home hygiene and the care of the sick, nutrition, first aid and life saving. A luncheon for delegates will be held at the New Willard Hotel, Tuesday. Special attention will be given to how volunteers may best aid in the work of disaster relief and roll call.

American Legion's Disaster Relief Service.—The National American Commission of the American Legion has published a handbook to emphasize cooperation with the American Red Cross in relief work and rehabilitation in time of disaster. The preliminary arrangements include, among other things, that every member of each post (there are 10,130 legion posts in the United States) report immediately in case of disaster to the post headquarters, and that the Red Cross Chapter be furnished with the name, address and telephone number of legion officers. When disaster occurs, the legion commander will report to the mayor of the city, offering the personnel of the post for emergency public duty and to the Red Cross director for assistance in relief activities. The legion post headquarters is to be kept open day and night for the first few days and a small reserve of truck drivers, signal corps and quartermaster corps men kept on duty day and night. The nature of the assistance which the legion may provide is enumerated in the pamphlet and may be summarized in these words: "Legionnaires will therefore act in accord with the orders of the post commander and his aides and will thereby bring the greatest possible measure of relief in the emergency period so that legion service in disaster may prove in fact to be dedicated to God and country."

Society News.—At the annual meeting of the American Electrotherapeutic Association, Atlantic City, September 8-11, Dr. Curran Pope, Louisville, Ky., was elected president; Drs. Charles F. Stokes, New York, Burton B. Grover, Colorado Springs, Colo., Abram Bern Hirsh, New York, Tilman Howard Plank, San Francisco, and George E. Derring, Worcester, Mass., vice presidents; Dr. Cadwallader C. Vinton, New York, treasurer, and Dr. Richard Kovacs, New York, secretary.——The foreign guests at the meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Chicago, September 20-22, were Prof. L. Fraenkel, Breslau, Germany; Prof. Dimitri O. de Ott, Leningrad, Russia, and Dr. A. Joseph Rivière, France. Dr. Jabez N. Jackson, Kansas City, Mo., President-Elect of the American Medical Association, gave the address at the annual banquet at the Drake Hotel. The society went to the Great Lakes Naval Training Station for a parade of the troops, Tuesday afternoon.——The International Physiological Congress has accepted the invitation of the American Physiological Society to hold the next meeting in America in 1929. ——Dr. Wesley H. Peck, Chicago, was elected president of the Santa Fe Railway Medical and Surgical Society at the annual meeting in Albuquerque, September 9; Drs. Samuel W. Spiteer, Wellington, Kan., Herman W. Goetlitz, Albuquerque, and Ola Putman, Marceline, Mo., vice presidents, and Dr. Mark L. Bishoff, Topeka, secretary-treasurer, reelected.——At the annual meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Chicago, September 20-22, Dr. John Osborn Polak, Brooklyn, was elected president; Drs. Francis L. Reder, St. Louis, and Edward Speidel, Louisville, Ky., vice presidents; Dr. James E. Davis, Detroit, secretary; Dr. George Van Amber Brown, assistant secretary, and Dr. William G. Dice, Toledo, Ohio, treasurer. The next meeting will be held in September, 1927. ——The thirty-sixth annual meeting of the New York and New England Association of Railway Surgeons will meet at the Hotel Commodore, New York, October 22-23.—— Dr. Fred H. Albee, New York, was elected president of the Travel Study Club of American Physicians at the conclusion of its recent European tour; Drs. Edward B. Heckel, Pittsburgh, and John P. Lord, Omaha, vice presidents, and Dr. Richard Kovacs, New York, secretary.——The next annual meeting of the Clinical Orthopedic Society will be in Detroit and Ann Arbor, Mich., November 5-6.——Dr. Daniel J. Donovan, chief surgeon, New York City Police Department, was elected president of the National Association of Police and Fire Surgeons and Medical Directors of Civil Service Commissions at the fifth annual meeting in Philadelphia, September 23; Dr. Edwin G. Goodrich, Los Angeles, vice president, and Dr. John J. White, New York, secretary-treasurer.——At the annual meeting of the American Academy of Ophthalmology and Otolaryngology, Colorado Springs, Dr. Ross H. Skillern, Philadelphia, was elected president for the ensuing year, and Dr. Luther C. Peter, Philadelphia, president-elect; Drs. Harry W. Woodruff, Joliet, Ill., Ralph A. Fenton, Portland, Ore., and Conrad Berens, Jr., New York, vice presidents; Dr. William P. Wherry, Omaha, secretary, and Dr. Secord H. Large, Cleveland, treasurer, reelected. The next annual meeting will be at Detroit.

LATIN AMERICA

Disaster in Paraguay.—The number of persons killed in the hurricane that swept the town of Encarnacion, September 20, was estimated, September 23, at about 200, in addition to many seriously injured. More than 400 buildings were said to have been destroyed; many families are homeless, and funds are being raised for relief throughout the country.

Physician Elected President of Ecuador.—Our Quito exchanges are rejoicing that Dr. Isidro Ayora, professor of obstetrics in the Faculty of Medicine at the Central University of Ecuador, has been appointed provisional president of the republic. He has served in the cabinet and as president of the city council of Quito, and has inaugurated a number of useful reforms. Two other physicians have been given cabinet positions, Dr. P. P. Eguez, minister of *prevision social*, and Dr. L. Palacios, minister of war.

Hygiene Campaign in Porto Rico.—A personal hygiene campaign has been in progress in the public schools of San Juan, Porto Rico, during the last two years, according to the department of the interior, and the effects are apparent in the physical and moral condition of the children. In the campaign, teachers and pupils cooperated with school officials; city physicians gave health talks to pupils; nurses demonstrated proper methods of bathing infants, and the Red Cross supplied clothing, toothbrushes and glasses for correction of eye defects of needy children, and offered prizes to school rooms making the best record for cleanliness and order. Toothbrush, handkerchief and bath drills were conducted in the schools, health films and posters shown, health rules distributed, and plays and health recitations given by pupils. Diplomas and pins were awarded 3,910 pupils who observed personal hygiene rules as daily tasks. Individual medical inspection of more than 10,000 elementary school children was made. Examination included condition of clothing, shoes, stockings, handkerchiefs, finger nails, teeth, neck, ears and hair. Special provision was made for children suffering from tuberculosis.

FOREIGN

Disasters in Japan.—A report of the typhoon that recently swept the island of Oshima, Japan, placed the number of dead at 100 and the property damage at about $100,000,000.——Twenty-eight persons were reported to have been killed and about 100 injured in the derailment of the Tokyo-Shimonseki express train, September 23. This is said to be the fastest passenger train in Japan.

Epidemiologic Information Bureau in Algiers.—The health section of the League of Nations at its seventh session in June considered the establishment of a bureau of epidemiologic information in West Africa and examined the report of Dr. Destouches, who toured West Africa to inquire into the possibility of establishing the bureau. It was brought out in the discussion that there is a school of general medicine at Dakar, established on the same plan "as the French schools," which grants permits to natives to practice medicine but does not grant "a doctor's diploma," and natives possessing such authority are required to remain in the service of the administration for ten years. Wireless communication is not used commercially in Africa, it was said. It is impossible to transmit news by wireless during ten months of the year between 2 p. m. and nightfall, in view of the climate, except from the most powerful stations situated at Bamako, Brazzaville and the cape. Dr. Rajchman favored the establishment in West Africa of a provisional center of study; Prof. Léon Bernard considered that Algiers, which is connected with the principal African centers, should be chosen as the site for the Pan-African Bureau. Prof. Ricardo Jorge, Lisbon, considered that the bureau should be not only an epidemiologic information center but a center for all African pathology. The committee unanimously agreed that a Pan-African bureau of a special character, devoted to the collection of scientific information rather than to the dispatch of administrative information, be established; that a provisional experiment be conducted, and that Algiers be chosen as the headquarters of the bureau. It was recommended that the report and views of the committee on the organization of the bureau be drawn up and submitted to the various governments for approval.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 11, 1926.

Insulin Poisoning Mistaken for Alcoholism

Dr. James Glover, a physician practicing at Bentinck Street, London, W., was charged with being drunk while in charge of a motor car and with driving in a manner dangerous to the public. It was stated that while driving at about midnight, July 23, he mounted the offside footway, ran along it for a distance, recrossed the road, ran into a lamp-post, rebounded across the road, and came to rest against a garden wall. A policeman spoke to him, and he then drove straight across the road into the lamp-post he had just hit. On the way to the police station he fell to the ground and had to be assisted to his feet.

The police divisional surgeon confirmed the constable's opinion as to the accused being drunk. The defendant gave evidence that he was suffering not from drunkenness but from insulin poisoning, due to an overdose. He was supported in his defense by four physicians—Dr. J. D. Ratcliffe of Clarendon Road, Southsea, pathologist at the Royal Portsmouth Hospital; Dr. Owen Lambert Vaughan de Vesselow, pathologist and assistant physician at St. Thomas' Hospital; Dr. Jansen, and his brother Dr. Edward Glover, all of whom stated that the symptoms of insulin poisoning might easily be mistaken for the symptoms of alcoholic poisoning. Dr. Glover was fined $100 and ordered to pay $50 costs, with the alternative of thirty-one days' imprisonment, for being drunk while in the charge of the car, and for driving dangerously he was fined $50, with the alternative of twenty-one days' imprisonment. Both convictions were endorsed on his license, and he was disqualified from holding a license for twelve months. Notice of appeal was given at once.

The foregoing was recorded in the *Times*, with a number of other cases, under the caption "Drunken Motorists." Notwithstanding Dr. Glover's own evidence and his calling of four physicians, two of whom were experts in the administration of insulin (against the solitary police surgeon for the prosecution) to prove that he was suffering from insulin poisoning, the case was recorded without comment in the medical press. Apparently every one thought that only justice had been done. Now comes the tragic sequel. Twelve days after his conviction, Dr. Glover died in Spain from diabetes. He was greatly upset by his conviction, which was said to have had a serious effect on his health. He immediately gave notice of appeal, and proceeded to Spain in the hope of recuperating. He was 44 years of age.

Some deductions may be made from this sad tragedy of an innocent man deprived by death of the opportunity to vindicate himself. The police, and unfortunately sometimes their official medical advisers, are too ready to believe that symptoms which alcoholism has in common with other conditions can be due only to it. It is well known that cases of head injury are from time to time thus mistaken for alcoholism, and the mistake is sometimes discovered by finding a prisoner under arrest for drunkenness dead in his cell from fracture of the skull. A similar mistake appears now to have been made with regard to insulin poisoning. It is not generally realized that unless insulin is given with great exactitude with regard both to dosage and to the time elapsing before the next meal the hypoglycemia due to administration of this hormone may produce loss of control over the nervous and muscular systems difficult to distinguish from the effects of alcohol. The executor of the late Dr. Glover has received many letters from those who have had this experience. Finally, it is obvious that no one undergoing insulin treatment should drive a motor car. Efforts are now being made by the relatives of Dr. Glover, by putting the facts before the home secretary, to get his conviction for drunkenness while in charge of a motor car quashed.

Safety in Railway Travel

The returns of railway accidents, just issued, show that only one passenger was killed in a train accident last year. Since the opening of the present century there have been two years, 1901 and 1908, without a single fatality to passengers in accidents to trains, and in 1909, as in 1925, only one fatal accident occurred, while in each of the years 1916, 1919 and 1923 there were only three. When it is considered that more than 1,700,000,000 passenger journeys by train are made every year on the railways of Great Britain, involving the running of 262,000,000 passenger-train miles, it will be seen that a passenger's risk of death on the railway is so infinitesimal as to be negligible. It is impossible not to contrast this comparative safety with the "death toll of the roads" which confronts the newspaper reader daily, and is accentuated each weekend and every holiday period in town and country alike. Compared with the ever-present peril of the London streets, in which 840 persons were killed in 1925, or the heavy death roll of 3,631 for a year on the roads of Great Britain, a journey by train to hundreds of millions of people is practically without risk. In no other country in the world are such elaborate precautions taken to insure the safety of the traveler by rail, and to this may be attributed the fortunate position occupied by Great Britain in regard to railway accidents.

Irish Free State Census

A preliminary report on the results of the Free State census has been issued. No census was taken in the Free State in 1921 on account of the disturbed condition of the country, and the present report covers the vital statistics of the twenty-six Free State counties between the dates April 2, 1911, and April 18, 1926. The report records a decline in the population of the Free State as against an increase in that of the six counties of northern Ireland. The figures for the fifteen years are as follows: (*a*) All Ireland decreased from 4,390,219 to 4,229,124, a decrease of 161,095, or 3.7 per cent; (*b*) the Free State decreased from 3,139,688 to 2,972,802, a decrease of 166,886, or 5.3 per cent; (*c*) northern Ireland increased from 1,250,531 to 1,256,322, an increase of 5,791, or 5 per cent. From 1851 to 1891 there was a continuous decrease in the total town population of the twenty-six counties, but from 1891 on there was a continuous increase. The latest census shows that at present 63.2 per cent (in 1841 the figure was 80.7 per cent) of the people live in country districts; that is, outside villages and towns with 260 or more inhabitants. The total population in all towns of 200 persons and upward decreased by 13.5 per cent from 1841 to 1926. An examination of the population according to the sexes shows that in 1926 there are 973 females to every 1,000 males in the Free State. In northern Ireland there are 1,066 females to every 1,000 males. In Ireland as a whole the ratio is 999 females to 1,000 males. Dublin and the other cities of the Free State show an excess of females over males, but this is reversed in the country districts and small towns. The proportion of females per thousand males in the population of the Free State is lower than in that of any of the principal twenty-one European countries. Both the birth rate and the death rate continue to decline. The former is now 21.1 per thousand persons living and the latter 16. Of the European countries, Ireland shows the highest proportion of its natives living overseas, 30.5 per cent of those at home. The nearest figures to this are 14.8 for Norway and 14.1 for Scotland.

PARIS

(From Our Regular Correspondent)

Sept. 1, 1926.

Malta Fever

Mediterranean fever, or melitococcia, which was formerly called Malta fever, prevails on the borders of the Mediterranean. It attacks goats and is transmitted to man by the milk of goats and by cheese prepared from the milk. It is not widespread, but, unfortunately, is spreading. The consumption of goat's milk in France has increased very much of late years. It costs little to feed a goat, and she furnishes 600 liters of milk a year. A cow gives about 3,200 liters, but weighs 500 Kg., and the goat, 40 Kg. The goat thus furnishes fifteen times its weight in milk and the cow six times its weight. Cheese from goat's milk is held in high favor in certain regions, but when it is fresh it contains an abundance of the melitococcus in a virulent state. Now that the cheese is being exported more and more, occasional cases of Mediterranean fever are being noted in regions far away from the source of supply. Recently, a civil engineer of Paris had eaten cheese from goat's milk in Marseilles, and died of Mediterranean fever after reaching home. The diagnosis of Mediterranean fever is difficult for a physician who has never seen a case. All the symptoms seem to point to typhoid or to paratyphoid, for the fever curve is the same. In principle, in every alleged unusual case of paratyphoid, with remissions of several days, followed by recurrences, if the serodiagnosis is negative for paratyphoid, Mediterranean fever may be suspected, and an inquiry instituted to discover whether the patient has not eaten goat's milk or cheese made from goat's milk. Diagnosis by Burnet's intradermal test is difficult in man; it is not so difficult when applied to a goat. A blood culture is more decisive, but requires from fifteen to eighteen days. Dr. Goiny of Montpellier, after having treated thirty-six patients in six successive outbreaks of Mediterranean fever, has reviewed the present situation. Wright's sero-reaction has given him the most rapid and most certain results. Vaccination was successful in five cases out of eight, both autovaccines and stock vaccines having been employed. The latter allow treatment to be begun twenty days earlier than when autovaccines are used. Quinine and metallic ferments are not constant in their effects. The disease is rarely fatal, but it is of long duration, with interminable recurrences, and leaves the patient in a state of severe depression. When death has resulted it has usually been through endocarditis. Prophylaxis is difficult. Goat's milk when sterilized acquires a disagreeable taste. About all that can be done is to eliminate all animals that are susceptible to the skin reaction. The goat harbors the melitococcus without evident signs of the infestation, unless it be the frequency of premature delivery. Goat's milk is seldom infected by the endogenous route. The micro-organism is more frequently eliminated in the urine of the goat, whence the udder becomes infected. During milking asepsis would therefore be an effective measure. Asepsis and the skin test are both applied on the large goat dairies in the vicinity of Paris, which are supervised by the sanitary inspection service. The goat-herders in the rural districts, however, refuse to believe that such a disease exists. These herders, furthermore, generally are immune, owing to a gradual vaccination.

A Revindication of the Clinical Diagnosis

Dr. Peugniez, a head physician of the hospitals, recently gave an address before the surgical society of Paris, which some interpreted wrongly as a manifestation of a retrograde spirit. In his address he protested against the tendency (of young physicians, more particularly) of attaching undue importance to laboratory examinations, which results, he alleged, in weakening of clinical acumen. Such a protest would not have awakened attention if it had not been uttered by a physician somewhat advanced in years, possessing considerable authority, and one whose personal knowledge of laboratory technic is unquestionable. He cited the contradictions that occasionally arise in the interpretation of a microscopic section of a tumor and the lack of uniformity in the interpretation of the Wassermann test. Too many physicians ask for a Wassermann test in connection with almost every disease. Too many laboratories furnish systematically positive or "suspected" reactions because they think that such an interpretation will be more agreeable to the physician. Too many roentgenologic examinations are requested which offer vague results and sometimes confuse the diagnosis. Radiography of the lung is responsible for more errors in diagnosis of tuberculosis than the older methods, and today only the fluoroscopic examination can be relied on. In the examination of the abdomen, likewise, the roentgenogram furnishes illusory information, and it is preposterous to expect it to clear up a diagnosis of appendicitis when clinical means are more certain. M. Peugniez cited cases in which the roentgenogram led to a diagnosis of "sarcoma," whereas only hematomas were present. In other cases, tumors were declared inoperable, but the owners have been in good health for many years. The finding of urobilin in the blood has often given rise to the conclusion that disease of the liver existed, but now it is known that urobilin may be produced outside the liver. High nitrogen retention has often been taken as evidence that the examinee was in a dangerous condition, whereas he may have been in good health then and may be now. Inversely, M. Peugniez cited the case of a surgeon whose patients had lived for many years after the removal of tumors. From the clinical standpoint these tumors were unquestionably cancerous (with glandular metastases) but his results were questioned because the pieces removed had not been subjected to histologic examination. The numerous laboratory researches of M. Peugniez prove that he is not an enemy of scientific progress. He merely is desirous that the younger generation shall not abandon clinical methods of examination. He fears lest a desire to make as little effort as possible may induce young physicians to expect the roentgenologist, the chemist, the microbiologist and the pathologic anatomist to do their work and to furnish him with ready-made diagnoses. Peugniez' conception is that scientific collaborators are to be consulted when the physician desires to clear up a doubtful diagnosis or confirm a grave decision. But the information that they offer is without value unless it is interpreted and fits into a thorough clinical examination of the patient. Dr. Peugniez did not wish to state publicly, although it is well known, that the number of diagnostic laboratories is increasing, and that they are not supervised as yet, although the Academy of Medicine is demanding such control. While a great many laboratories do reliable work, others, installed possibly in the rear office of a pharmacy, in which the personnel is incompetent, may furnish the material for unprofessional acts, in case neither physician nor pharmacist is scrupulous. The public has come to rely on diagnoses based on laboratory examinations, but of late the errors of the laboratories are beginning to attract attention.

Homes for Mothers

The *maisons maternelles*, or homes for mothers, are of comparatively recent origin in France, although they are already rendering excellent services in child welfare, in the crusade against child mortality, and in the campaign against race suicide in general. The best known of these homes are in Paris, Tours and Lyons. A bill has just been introduced into the chamber of deputies by a group of legislators, at the head

of which stands Professor Pinard, which provides that a *maison maternelle* shall be created in each department of France. One or more establishments of this kind are to be annexed to every maternity hospital, and will admit women who are beneficiaries of the law pertaining to lying-in women and wish to nurse their new-born at the breast; also women who wish to conceal their identity, and, exceptionally, pregnant women who require special care. The expenses will be borne, half by the central government, and half by the department concerned. The mothers may remain as long as their health or that of their children may require. They will receive a per diem allowance, the amount of which will be determined by the general council of each department. Such allowance will not, however, affect allocations that they may receive from other sources. A certain percentage of their allowance will be withheld as a reserve fund and will be given to them when they leave the home.

Entertainments for the Promotion of Public Health

During the vacation period just closed, entertainments and festivals were organized in the large spas or watering places, in order to awaken interest in public health work. Such entertainments have been found more effective in raising revenue than the "flower festivals," or tag days, the costume balls, and the equestrian parties. The national bureau of social hygiene and the national committee of defense against tuberculosis lent their aid in the organization of these entertainments, which consisted of lectures, the presentation of educational motion picture films, the sale of pamphlets, and the collection of funds. At Thonon-Evian, the entertainment took the form of a "health day." At Luchon also, there was a grand public health festival, under the chairmanship of the bey of Tunis, who was taking treatment at that resort. In the department of Haute Savoie, a whole week was devoted to such festivals, which took on a somewhat special character and appeared to be a success from both an educational and a financial point of view; that is to say, considerable sums of money were collected for the benefit of sanatoriums for the people, and a new and more enlightened attitude toward public health questions was cultivated among the general public.

RIO DE JANEIRO

(From Our Regular Correspondent)

Aug. 15, 1926.

Venereal Diseases

In a recent conference, Prof. E. Rabello reviewed the progress and tendencies of antivenereal legislation in force in Brazil. Before the organization of the national health department in 1920, a law on venereal diseases did not exist and nothing was done for their prevention. When the department was created, adequate laws were adopted. The statutes do not contemplate coercion, but rely on education and treatment as the best prevention measures. Recent discoveries on etiology and treatment have proved valuable, while early dark field diagnosis and the use of arsphenamine permit effective early treatment. The sanitary education campaign and the establishment of venereal dispensaries have also helped. Restrictive measures were not applied. While the available statistics cover only a few years, the result is encouraging.

Halle's Method in Frontal Sinusitis

Dr. Souza Mendes spoke before the Medical and Surgical Society on the advantages of Halle's technic in the treatment of frontal sinusitis. There is no outside scar, as the approach is through the nose. It also makes possible clearing out of the ethmoidal cells, allows preservation of the head of the middle turbinate, and furthers the epithelization of the nasofrontal channel. Out of several of Souza Mendes' patients operated on by this method, only one still shows symptoms of chronic frontal sinusitis, and even that one is much improved. Dr. J. Vieira explained that he found Halle's method good for enlargement of the nasofrontal channel. Its cosmetic advantage is small, since Killian's technic leaves only a slight scar and gives better results. Dr. D. de Sanson found Dr. Souza Mendes' case reports too few and the period elapsed too short to justify drawing definite conclusions.

Diabetes as a Curable Disease

Dr. O. Clark recently delivered an address on the curability of diabetes. Since 1923 he has treated forty cases with insulin. In contrast to those confining this treatment to serious and incurable cases, Clark thinks it should be used even in early and apparently benign cases, because those are precisely the cases in which the patients are most likely to get really well.

Cataphrenias

Prof. A. Austregesilo has delivered another lecture on the group of diseases he calls cataphrenias. By this term he means a type of insanity without anatomic lesions and in which the patient may improve and even recover. In many cases coming under that description diagnosis is often difficult. Patients usually recover or at least improve within from six months to three years. Investigation showed that most cases diagnosed as dementia praecox really belonged to the cataphrenia group.

NETHERLANDS

(From Our Regular Correspondent)

Sept. 1, 1926.

The Physician's Right of Privileged Communication

In recent years, numerous happenings of a hygienic, sociological or economic nature have limited the physician's right of privileged communication. A committee appointed at the seventy-third session of the Nederlandsche Maatschappij tot Bevordering der Geneeskunst (the Netherlands medical association) proclaimed anew the importance of the privilege, not only in the interest of the individual but also in the interest of society. It regrets that, under certain circumstances, the declaration of the causes of death and the reporting of certain cases of infectious diseases and of certain births should be required. It would be better if it were not the attending physician who had to report to the police or to the courts. The attending physician should not be required or permitted to give information to insurance societies, to philanthropic societies, to employers or to medical inspectors of insurance societies. The committee recommended the organization of a medical board to determine under what conditions the physician's right of privileged communication should be vacated in the interest of society, and to come to an understanding with the legislative authorities as to legal requirements for the temporary suspension of the right.

As regards the life insurance companies, and the health and accident insurance associations, it would be better if physicians' communications were not made directly to the administration of those associations but through their medical councils.

Health Insurance for the Middle Classes

A report of the committee of the Nederlandsche Maatschappij tot Bevordering der Geneeskunst offers conditions on which physicians in general might accept a system of health insurance for the middle classes, from the standpoint of professional interests and the interests of an organization favorable to the insured.

The insurance should be reserved for families whose income does not exceed 6,000 florins ($2,400). All the members of the family should be insured except those whom the society refuses to accept after medical examination. The society may

refuse admission to any applicant in general but may not refuse to accept the new-born, who must be admitted without previous examination. The society may not cancel its contract with any insured person by reason of an aggravation of the member's condition of health, except those who may be chronically intoxicated by alcohol or tobacco.

There must be no limitation as to medical care or treatment by specialists, and, furthermore, treatment may be given by any physician at the option of the patient.

The health insurance society must not demand that physicians treat the insured at a lower rate than in their private practice. A tariff schedule suited to each region should be established. A board of arbitration should be appointed to consider controversies in regard to wages, and questions as to a person's right to be admitted into the society in view of his annual income.

The Antivenereal Campaign Among Sailors

The government has appropriated a considerable sum in order that the health service may take part in the international campaign against venereal diseases among sailors.

Death of Cornelis de Mooy

Dr. Cornelis de Mooy, formerly lieutenant general in the army medical corps of the Netherlands, has died at the age of 92. His suturing needle and his automatic dismountable trephine are well known. He was one of the first, if not the very first, to propose the transportation of the wounded by means of a captive balloon. At the twelfth international congress of the Red Cross at Geneva, his inventions attracted considerable attention. In the report of the congress we read:

> The army medical corps and the Red Cross of the Netherlands had on display a series of litters, transporting cots, wheel chairs, apparatus for the suspension of the wounded, and other devices due to the ingeniousness and benevolent spirit of Dr. de Mooy, one of the precursors of sanitary aviation and one of the most ardent and most persistent promoters of better conditions of transport for the wounded and the sick.

The International Congress on Rescue Work

The third international congress on rescue work and first aid is to be held in Amsterdam. To judge by the advance registrations and the number of official delegations already announced, the congress will take on a truly international character. Numerous papers will be presented and practical demonstrations of rescue work after a railway accident and the delivery of passengers from a disabled ship at sea will be given. Also many receptions and festivals of various kinds have been provided by the committee on organization.

Advertising Pharmaceutic Specialties

Reference has already been made to efforts made in Amsterdam to suppress the display in street cars of quack advertisements. At the meeting of the health commission recently a still more drastic proposal was made; namely, that all advertising to make known a pharmaceutic product be suppressed. It was opposed to public policy, it was argued, that a given product which would be sure to be misused should be advertised to the public.

The Incidence of Tuberculosis Among the Various Trades and Professions

At the recent congress of public health, Eykel and van den Berg discussed the dangers of tuberculous infection in the various trades and professions. They emphasized that the greatest danger of infection exists in the trades and professions that involve considerable contact with children; particularly, if the children are young. Tuberculous persons should not be employed as children's maids, wetnurses, governesses, nurses in day nurseries or pediatric services, or as teachers. In this connection, it would be well to pension any tuberculous public official when his duties bring him in contact with children. Another occupation that exposes to the dangers of infection is the handling of foodstuffs. The distribution of milk should be carefully supervised. Milk, therefore, should be sold only in closed receptacles. Periodic examination of all persons having to do with the distribution of milk should be controlled by the consultation bureaus established for the detection and treatment of tuberculosis.

Terminal Disinfection After Contagious Diseases

The disinfection of rooms and their contents after occupation by a patient with a contagious disease appears to be going out of use. Professor Chagas referred to it some time ago as an anachronism. At the congress of public health held in Utrecht, Dr. Heyermans also spoke against it. It is now generally accepted that contagious diseases are transmitted only by contact with patients or with bacilli carriers. Terminal disinfection after a contagious disease should consist in a thorough cleansing and nothing more.

BERLIN

(From Our Regular Correspondent)

Sept. 4, 1926.

The Financial Situation of the Medical Profession

Although the number of medical students, as compared with the prewar period, is now much less, it is nevertheless greater than future needs require. The academic bureau of information in Leipzig, therefore, published recently the following article:

The profession, even before the war, was overcrowded. Owing to the facts that, since the war, the number of medical students and the number of graduates have increased, and that German physicians from foreign countries, the colonies, and the ceded and occupied territories, have settled in the German *reich*, it will be readily understood that present-day Germany, though with a population six million less than before the war, has a much larger number of physicians than the old German empire.

A large proportion of the population are insured in the *krankenkassen*. Very few physicians can make a living without participating in panel practice. However, only a restricted number of physicians are admitted to panel practice, for which reason a young physician, especially in the large cities, requires, as a rule, several years to establish a paying practice.

The incomes of physicians from panel practice, in spite of the increased incidence of disease, are by no means as great as is often assumed. The league of German physicians has reported the following results of its computations for the year 1924:

Gross Incomes of 1,753 German Physicians for the Year 1924

992,	or 56.5	per cent,	had an income below	4,000 marks annually
413,	or 23.5	per cent,	had an income below	8,000 marks annually
209,	or 12.0	per cent,	had an income below	12,000 marks annually
82,	or 4.5	per cent,	had an income below	16,000 marks annually
52,	or 3.5	per cent,	had an income above	16,000 marks annually

The foregoing are the gross incomes. To find the net incomes, the overhead expenses must be deducted, or, for specialists, 40.5 per cent; for rural physicians, 36.2 per cent, and for general practitioners, in the cities, 30.8 per cent, of the gross receipts.

Since so large a percentage of the population is insured in the *krankenkassen*, only a comparatively small percentage is left on which to draw for private patients. Furthermore, the incomes of physicians from these strata of society is lessened by the fact that, owing to the economic depression that still prevails to a greater or less degree, many patients who are not insured in any *krankenkasse* are compelled to forego med-

ical assistance, and, in this respect, the prospects for the immediate future are not reassuring. The immense sums that must be collected from the impoverished German people in order to make the payments to foreign countries during a long period of years will prevent the development of a financially strong clientele from which physicians might hope to draw their private patients. Again, there is a strong movement on foot to bring the middle class, which was formerly the main source of private patients, under the operation of the social insurance system. If that is done, the physician will have little opportunity of securing private patients, and he will depend for his existence entirely on panel practice, to which, however, it is not always possible to gain admittance.

The marked decrease in the number of medical students since 1921 is shown in the following tabulation:

Number of German Medical Students Before and Since the War

Summer Semester 1914	Summer Semester 1924	Winter Semester 1924-1925	Summer Semester 1925	Percentage of Increase in 1925 over 1924-1925
14,316	7,302	6,106	6,421	5

According to the opinion of the medical leagues, an improvement in the prospects of physicians in from ten to fifteen years can be counted on, on the basis of these figures.

There are still a few openings in the smaller cities for competent specialists, but the prospects are not equally favorable in all specialties. For example, a dermatologist would hardly make a living in a small city. Also specialists in the smaller cities in the vicinity of universities have to struggle for their existence. The prospects for women physicians are not much better. It is a matter of observation that many women patients prefer to be treated by men physicians.

Meaning of the Term "Specialist"

The Reichsausschuss für Aerzte und Krankenkassen, which drafts regulations concerning relations between physicians and health insurance societies, after its last session, published the following:

The right to assume the title of *facharzt*, or "specialist," is based on the following presuppositions:

1. The specialist must be sufficiently well trained in his specialty.

2. The training will be assumed, without further inquiry, to be satisfactory, if the candidate, after graduation as doctor of medicine, and after completion of one year of internship, has had at least four years' experience in one of the following three specialties: surgery; gynecology and obstetrics, or internal medicine, including nerve affections. For the remaining specialties, at least three years, and for surgery and orthopedics, or for surgery and gynecology, at least six years' experience is presupposed. Experience in other fields of medicine, provided such experience is of value for the specialty chosen, may be counted up to one year.

3. Such experience should ordinarily be acquired while serving as assistant physician at a university clinic or academy of practical medicine; in detached departments of large hospitals under the directorship of well known specialists; in sanatoriums; in suitable private clinics, or in special departments of military hospitals.

Also training in so-called volunteer positions may be accepted, if the "volunteer" performed work of as responsible a character as that of an assistant physician.

Likewise, training received as assistant or "volunteer" physician in independent university medical policlinics, if the latter are associated with "district policlinics," shall be counted in full; otherwise only to the extent of three years. For specialties other than "medical" (as distinct from surgical), the training periods spent in policlinics and in the consultation rooms of recognized specialists will be counted on the basis of 50 per cent.

Exceptions may be made only in special cases, in view of local and personal conditions and in agreement with the local group of specialists, by the competent medical organization; for example, in the case of older practicing physicians who may wish to take up a specialty later in life.

4. Evidence of training must consist of certificates issued by the directors and the physicians in charge, and covering the kind and the duration of the service rendered.

ITALY

(From Our Regular Correspondent)

Aug. 15, 1926.

The School of Physical Education Connected with the University of Bologna

A school of physical education, connected with the Faculty of Medicine, has been established at the University of Bologna. The school will give a two-year course, for which not only students of medicine but also students of other faculties, and even persons not otherwise connected with the university, may register. The principal subjects of instruction, in addition to the theory and method of physical education, will be: anatomy, anthropology, applied physiology; hygiene, orthopedics, and, for the male students, military tactics and target practice. The commune of Bologna has assumed the expense of housing the school. Professor Ottolenghi, who holds the chair of hygiene at the University of Bologna, has been chosen to direct the affairs of the new institution.

The New Rector of the University of Sienna

As a result of the resignation of Rector Achille Sclavo, professor of hygiene at the University of Sienna, the office of rector for the next two years has been bestowed on Professor Bolacci, department of botany.

Prophylaxis of Trachoma

The minister of the interior, who is, at the same time, the director general of the public health service, discusses in a recent circular letter, addressed to the prefects of the realm, the prophylaxis of trachoma, and recommends particular sanitary vigilence toward industrial establishments in which personnel coming from localities where the disease prevails are employed. Health officers are instructed to remind all physicians, and, particularly, those attached to the sanitary service among large groups (industrial establishments, laboratories, schools, etc.) or among families of workmen living in crowded quarters, that trachoma is a notifiable disease and also that suspected cases must be reported.

A New Pasteur Institute at Milan

In memory of two deceased members of his family, Carolinda and Annetta Bosisio, Sig. Luciano Bosisio of Milan has given the Ospedale Maggiore of that city a pavilion for antirabic treatment.

Coming National Congresses

The seventh Italian Congress of Medical Radiology will be held in Naples, October 14-16. The topics on the program are: (1) apparatus of the highest potential and radiation, by Professor Adinolfi of the University of Naples; (2) contrast mediums in the roentgenographic diagnosis of pulmonary lesions, by Professor Rossi of the University of Parma, and (3) radiologic management (roentgen rays, radium) in the treatment of cancer, by Professor Epifanio of the University of Palermo and Professor Lupo of the University of Turin. An exhibit of negatives, diapositives, etc., will complete the

scientific demonstration and will illustrate the present status of Italian radiology.

At Rome, October 20-22, will be held the second Congress of the Otoneuro-Ophthalmologic Society. Professor Barré of Strasbourg will deliver the official address, on "The unification of methods of research on the vestibulum." In memory of Professor Gradenigo, otologist of the University of Naples, the Otoneuro-Ophthalmologic Society and the Otolaryngorhinologic Society will hold special commemorative exercises.

Treatment with Ultraviolet Rays in Italy

The Associazione ultravioletta italiana was recently founded in Milan, to bring together persons giving ultraviolet-ray treatment and to further practical and scientific ends in this field. The society will hold, every two years, a congress in some city of Italy, at which session papers will be presented and discussions on new application of ultraviolet therapy will be held. Prizes for researches on the subject will be established, and meetings and lectures to promote public interest will be organized. The new society will keep in touch with similar Italian and foreign societies and will call the attention of health authorities to the prophylactic importance of artificial heliotherapy; particularly with regard to rickets and tuberculosis in children. Professor Cuzzi was elected president of the society.

Soon after it was founded, the society held its first congress in Milan. Dr. Mario Acqua discussed the influence of actinotherapy on nutrition, and recounted his results in children from 8 to 20 months old by the application of initial weak doses which were gradually increased. The irradiations were given daily and the Bach lamp was employed.

Dr. Armani di Biella presented a paper on the uses of ultraviolet rays of service in the campaign against malaria.

Dr. Ballico cited several cases in which he had successfully employed ultraviolet rays in the treatment of psoriasis.

Dr. Mascherpa of Milan pointed out that artificial heliotherapy is not merely a copy of natural heliotherapy, and that, while natural heliotherapy is often superior, artificial heliotherapy is more easily applied.

Other communications were presented by Professor Porcelli (ultraviolet therapy in baldness); Dr. Redaelli (reactions of ultraviolet rays on the human body); Professor Spolverini of the pediatric clinic in Pavia (experimental researches on the action of ultraviolet rays on growth); Dr. Bentivoglio (experimental researches on the influence of irradiated milk on growth); Dr. Tosi (the modification of the sanguinary temperament in children, as the result of the application of ultraviolet rays).

Marriages

Taylor Stukes Burgess, Atlanta, Ga., to Miss Margaret Moorhead Sills of Baltimore, September 15.

Wesley L. Williams, Norfolk, Va., to Miss Stella M. Duke of Washington, D. C., August 5.

Taswell Paul Haney, Burnsville, Miss., to Miss Dorothy Gentry of Crozet, Va., July 15.

Forrest Wayne Merica, Rensselaer, Ind., to Miss Alice O'Brien of Cleveland, in July.

Shirley H. Betts to Miss Lucille Henderson, both of Shreveport, La., September 10.

Wiley Davis Forbus to Miss Elizabeth Knox Burger, both of Baltimore, September 25.

Charles Byron Ward to Mrs. Verna Kendall, both of Spokane, Wash., May 26.

Jacob A. Goodhart to Miss Sophia S. Gelder, both of Chicago, May 30.

Deaths

Alembert Winthrop Brayton, Indianapolis; Medical College of Indiana, Indianapolis, 1879; professor emeritus of dermatology and syphilology, Indiana University School of Medicine; chairman of the Section on Cutaneous Medicine and Surgery of the American Medical Association, 1897-1898; member of the American Dermatological Association; past president of the Indiana State Medical Society; editor of the *Indiana Medical Journal,* 1892-1911; father of three sons who are physicians; aged 78; died, September 21, at St. Vincent's Hospital, as the result of a fall.

John William Perilli, New York; Baltimore University School of Medicine, 1898; member of the Medical Society of the State of New York; formerly clinical professor of surgery, University and Bellevue Hospital Medical College; at one time president, board of trustees of the Italian Hospital; on the staffs of the Broad Hospital, and Polyclinic hospitals; aged 48; died, September 15, of pneumonia and diabetes.

Albert Henri Prevost, Montreal, Que., Canada; Laval University Faculty of Medicine, Quebec, 1911; professor of neurology and clinical nervous diseases at University of Montreal Medical Faculty; proprietor of a hospital bearing his name; on the staff of Notre Dame Hospital, Cartierville; aged 45; died, July 4, of injuries received in an automobile accident.

Harry Hastings Wyman, Aiken, S. C.; Medical College of the State of South Carolina, Charleston, 1875; member of the South Carolina Medical Association; Confederate veteran; formerly member of the state board of medical examiners, and chairman of the local board of health; at one time city physician; aged 81; died, September 4, following a long illness.

Herman Hoffman Birney, Philadelphia; George Washington University Medical School, Washington, D. C., 1888; University of Pennsylvania School of Medicine, Philadelphia, 1889; member of the Medical Society of the State of Pennsylvania; served during the World War; aged 60; died, August 25, at Asheville, N. C., of pulmonary tuberculosis.

Stacy Anson Ransom, Washington, D. C.; Georgetown University School of Medicine, Washington, 1893; Spanish-American War veteran; medical officer in charge of U. S. Public Health Service in Shanghai, China; formerly president of the Shanghai Medical Society; aged 56; died, August 26.

Charles H. Oakman ⊕ Detroit; Detroit College of Medicine and Surgery, 1906; formerly associate clinical professor of surgery at his alma mater; member of the state board of dental examiners and president of the Detroit Board of Health; aged 61; died, June 25, of carcinoma of the liver.

Bernard F. Becker, Toledo, Ohio; University of Zurich, Switzerland, 1882; formerly associate professor of surgery, Toledo Medical College; health officer of Toledo, 1909-1914; on the staffs of the Robinwood and Toledo hospitals; aged 69; died, August 25, of hemorrhage of the stomach.

Joshua Lindley Barton, New York; Medical Department of Columbia College, New York, 1881; member of the Medical Society of the State of New York; aged 77; died, September 10, at the Glens Falls (N. Y.) Hospital, of arthritis of the spine, heart disease and chronic nephritis.

William Joseph Hunnicutt ⊕ Asheville, N. C.; University of Tennessee College of Medicine, Memphis, 1895; member of the Associated Anesthetists of the United States and Canada; on the staff of the Meriwether Hospital, where he died, September 5, of angina pectoris, aged 59.

Joseph Thomas Coulbourn, Birmingham, Ala.; University of Maryland School of Medicine, Baltimore, 1886; member of the Medical Association of the State of Alabama; aged 64; died, September 3, at the Seale Harris Infirmary, of pneumonia and peritonitis.

Samuel Greenfield, New York; Cornell University Medical College, New York, 1904; member of the Medical Society of the State of New York; on the staff of the Gouverneur Hospital; aged 50; died, September 10, at a local hospital, of diabetes.

Charles Irving Simon, Hoboken, N. J.; Medical Department of Columbia College, New York, 1879; aged 70; died, September 2, at the Highland Park (Ill.) Hospital, as the result of a cerebral hemorrhage suffered some months ago.

⊕ Indicates "Fellow" of the American Medical Association.

James Wallace Beveridge, New York; Columbia University College of Physicians and Surgeons, New York, 1901; served during the World War; aged 46; died, September 7, at the Roosevelt Hospital, of pulmonary tuberculosis.

Peter Wyckoff Neefus, Rochester, N. Y.; New York Homeopathic Medical College, New York, 1877; member of the Medical Society of the State of New York; aged 73; died, in September, following a long illness.

William John Brown, Reading, Mass.; Boston University School of Medicine, 1901; member of the Massachusetts Medical Society; aged 63; died, July 17, at the Massachusetts Homeopathic Hospital, Boston.

Howard Hasbrouck Bennett, Deadwood, S. D.; Loyola University School of Medicine, Chicago, 1926; intern, Cook County Hospital, Chicago, where he was found dead in bed, May 25, of heart disease.

George Boal Orlady, Huntington, Pa.; Jefferson Medical College of Philadelphia, 1872; for many years judge of the Superior Court of Pennsylvania; aged 76; died, September 10, of heart disease.

Alexander D. Stewart, Montreal, Que., Canada; McGill University Faculty of Medicine, Montreal, 1888; aged 63; died, recently, at the Royal Victoria Hospital, of heart disease.

Eugene Pendleton, Cuckoo, Va.; University of Maryland School of Medicine, 1871; aged 73; died, September 9, at the Hygeia Hospital, Richmond, of carcinoma of the bladder.

William Hunter Steele, Rockingham, N. C.; Bellevue Hospital Medical College, New York, 1874; aged 76; died, August 21, at the Charlotte (N. C.) Santitorium.

John C. Bump, Kendrick, Idaho; University of Buffalo Department of Medicine, 1873; aged 87; died, July 12, at Seattle, Wash., of fractured hip and senility.

Walter Harold Lott ● McMinnville, Ore.; George Washington University Medical School, Washington, D. C., 1913; aged 39; died, September 6, of heart disease.

Summer J. Smith, Jefferson, Ga.; Atlanta Medical College, 1886; member of the Medical Association of Georgia; aged 64; died, September 7, of chronic nephritis.

William Martin Forster, Berkeley, Calif.; California Eclectic Medical College, Los Angeles, 1898; aged 68; died, August 18, of valvular heart disease.

Beriah Edwin Mossman, Greenville, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1879; aged 85; died, June 26, of myocarditis.

William McCoy Murphy, Alameda, Calif.; College of Physicians and Surgeons, Baltimore, 1879; aged 81; died, June 6, of cerebral hemorrhage.

B. Pearne Hatch, San Diego, Calif.; Northwestern Medical College, St. Joseph, Mo., 1891; aged 73; died, June 11, of pulmonary tuberculosis.

John Joseph Brady ✠ Frankfort, Kan.; Kansas City Homeopathic Medical College, 1896; aged 60; died, September 4, of cerebral hemorrhage.

Norton Goodman Winnard, Eugene, Ore.; Medical School of Harvard University, Boston, 1926; aged 25; died, July 24, of typhoid fever.

Joel Solomon ✠ Syracuse, N. Y.; Syracuse University College of Medicine, 1896; aged 53; died suddenly, September 12, of heart disease.

Thomas Boyd Jones, Independence, Ind.; Kentucky School of Medicine, Louisville, 1893; aged 62; died, July 10, of heart disease.

Henry W. Dornbusch ✠ Chicago; Rush Medical College, Chicago, 1883; aged 66; died, September 3, of cerebral hemorrhage.

Andrew J. Clark, Indianapolis; Kentucky School of Medicine, Louisville, 1880; aged 76; died, August 27, of chronic stomatitis.

John A. Blanchard, Cobden, Ill.; Eclectic Medical Institute, Cincinnati, 1875; aged 72; died, September 3, of angina pectoris.

Edwin J. Lewis ✠ Sauk Center, Minn.; Rush Medical College, Chicago, 1877; aged 78; died, August 29, following a long illness.

Leonard Dell, Athena, Ore. (licensed, Oregon, 1889); aged 88; died, August 13, at St. Mary's Hospital, Walla Walla, Wash.

William H. Hufnail, Grandview, Wash. (licensed, Wisconsin, 1900); aged 89; died, March 20, of senility.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

CONVENTIONS OF PECULIAR PRACTITIONERS

Random Impressions of a Biophysicist at the Annual Session of the Electronic Research Association

I did not ask where the association met, but sat down in the lobby to observe the guests. Soon a man about 60 years of age, short and fat, with a round, greasy face, ornamented by a bulbous nose and a mouth of too generous proportions, slouched into view. His pate was fringed by a wildly luxuriant growth of hair. He was clothed in a suit which apparently had not been pressed or cleaned since some mail order house had sent it out. The coat reaching nearly to his knees was provided with enormous pockets, undoubtedly capable of concealing an oscilloclast, a plentiful supply of snake oil, colored sand to put in kerosene lamps, or anything that the gaping victim might wish to buy. I noticed no soup spots on his vest—yet I had been told that soup spots on the vest were infallible evidence of quackery. This statement is unscientific. I did observe a wonderful watch fob hanging from his vest pocket; it was fully eight inches long and made, I believe, of everything from centennial souvenirs to nuggets of iron pyrites. By the shade of Abrams, thought I, this individual must be either an electronic physician or the proprietor of a medicine show at some country fair.

The room into which I followed him appeared to me like a stage set for the presentation of Dante's Inferno. In one corner was a comely young woman writhing as if she were suffering the tortures of the damned. Perhaps she had been bitten by an oscilloclast; or perhaps she had drunk not wisely but too well of the water in the Radium Water Jars distributed about the room; or perhaps she was just demonstrating the great electronic theory that the cells of the human body vibrate. I cannot say whether the cells of her body were vibrating electrically, but I can vouch for their vibration. And, believe me, no two cells were vibrating at the same rate. However, my three guesses were wrong; she was only demonstrating an electrically operated table for the administration of osteopathic treatments.

I wandered about listening to the pseudoscientific talks of the sales representatives of the various exhibitors, and collecting pamphlets and circulars advertising their devices. The representative of the Actino Laboratories demonstrated a lamp called "The Mountain Sun," a carbon arc lamp, provided with Harmono Chrome Screens. Whatever therapeutic value the lamp had he probably destroyed by interposing a colored screen, apparently of glass, between the lamp and the patient.

Near this company I found a circular advertising a book by Annie Riley Hale, "a devastating answer to Dr. Morris Fishbein's venomous 'Medical Follies.'" I asked who this Dr. Fishbein was. I was told that he was the President of the A. M. A., a conscienceless trust, which was fighting the electronists to the death and which was thereby depriving suffering humanity of the benefits to be derived from electronic therapy, "drugless drugs," "chemical-less chemicals," etc.

It was now announced that the erudite president of the E. R. A. was awaiting his audience and I lost no time escaping from the blast of righteous indignation into the quiet and "darkness" of the meeting room.

The meeting was held in the Gold Room, a most appropriate place, symbolical of the golden harvest these gentlemen and ladies hope to reap. Fully one third of the 150 persons in the audience were women, and from their identification badges I surmised that the majority of them were not M.D.'s, O.D.'s, C.D.'s, etc., but masseuses. The majority of the men were elderly, probably physicians who could not make a living practicing legitimate medicine and surgery. The younger

men were possibly osteopaths and chiropractors who were supplementing their crude method of leg pulling by more mysterious technics. Obviously the audience could be divided into two classes—those who did not know any better, and those who were adepts at the great game of dollar chasing. I whiled away the time before the speaking began by attempting to classify the members of the audience. This man, slovenly dressed and with the wild, staring eyes of a fanatic—clearly a fool; that man, carefully dressed, bejeweled and with keen, shifting eyes spaced close together—undoubtedly an unscrupulous crook.

The first speaker emphasized the importance of standardizing the terms of electronic therapy and suggested that the E. R. A. appoint a committee on nomenclature. The worthy gentleman then extended the kind offer of the electronic college to examine any device used for electronic diagnosis and treatment and send to this committee a report of its observations. Perhaps some soulless electronic physician had been using his crystal radio set in treating patients instead of the high priced, many-tubed, double-barreled machine put out by the electronists, a practice which if it became general would interfere seriously with the profits of the electronic exploiters.

Then followed an oration. 'Twas nothing less than an oration. The most ordinary talk accompanied by the gestures of this man would be an oration. When the speaker spoke of the cells of the human body vibrating he would shake one hand, and then, when he spoke of a germ vibrating and sending out radiations destructive to the vibrations of the cell, he would shake the other hand. An oscilloclast, coming to the rescue of the poor cell, he would represent by describing in the air, with his hand, an approximately sinusoidal wave.

In his speech he, too, emphasized the importance of proper terms. He said that hereafter a diagnostician should not say that he obtained a cancer radiation because he would then be talking about a disease that the old-fashioned pathologists knew something about, but that he should say that he obtained an A wave, a B wave, or a Y wave.

Many and wonderful were the things of which he spoke. He gave an account of the experiments of several men. One of them took twelve plants on each of which there was a tumor growth and radiated one of them with waves from an electronic machine. The tumor disappeared and the plant thrived. The remaining eleven plants died. He took a second set of twelve diseased plants and around one he placed a copper ring. The tumor disappeared and the plant thrived, while the remaining plants died. The worthy speaker had been so impressed by this experiment that when his wife had a sore throat which did not yield to osteopathic treatments, he placed a copper ring around her neck and after a short time her throat became well.

I heard of eggs giving cancer and tuberculosis reactions and even of a can of peas radiating cancer waves. The speaker explained these observations in a most ingenious way. All things radiate waves, he said, and the waves from peas and from eggs have a frequency so near the frequency of a cancer wave that the oscilloclast, wonderful as it is, is not selective enough to differentiate between the two frequencies. Thus do the electronists dispose of the charge that they have discovered cancer, tuberculosis and what not in a bucket of red paint, or that they have accused a virtuous female guinea-pig of having diseases generally thought to be restricted to human beings.

Angina Minor.—During an attack of angina major, in addition to the terrible crushing agony substernal in site there are accompanying pains or unpleasant sensations which may be felt in the back between the scapulae, in the shoulders, arms, neck (suprasternal notch), jaw, even in the face and eyes. So in milder angina these radiated pains are to be noted, and they may prove of the greatest help in recognizing and assessing the significance of indefinite substernal discomfort.—Hay, John, M.D.: *Brit. M. J.*, July 10, 1926.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DIPHTHERIA BACILLI IN ANTRUM

To the Editor:—I have a patient, a nasal diphtheria carrier, with involvement of the maxillary sinus by the diphtheria bacilli. Repeated washings of the antrum have not cleared the condition there. Intranasal exposure to ultraviolet rays has failed to eliminate the diphtheria bacilli, apparently because of inability of the rays to reach within the antrum. Radical operation has been proposed for the cure of the antrum condition. Can you cite any experience with similar cases, with procedure used and results obtained? If published, please omit my name and address.

M.D., Connecticut.

Answer.—It is probable that relief of the condition in the antrum will get rid of the diphtheria bacilli. Persistence of diphtheria bacilli is usually dependent on some abnormal condition where the bacilli live.

DYEING THE HAIR

To the Editor:—The Journal, Nov. 14, 1925, contained formulas for hair dye, which were very good aside from the color. Could you suggest a formula to be used in coloring the hair white, especially when the hair is black in small patches? Please omit name and address.

M.D., Nevada.

Answer.—Bleaching the black spots will probably be unsatisfactory, because the bleached spots will not match the ones already white. It would seem much more likely to give satisfaction to dye the whole head of hair black.

PARAFFIN ON SKIN

To the Editor:—It appears from the literature that workers in paraffin oils are particularly prone to cancer, especially at mucocutaneous junctions, as lip cancer. If this is true, why are such oils so freely prescribed as bases for sprays for the nose or ointments for the lips? Is it dangerous even remotely to use petrolatum on the lips freely over long periods? In the dry desert country of the Southwest, it is necessary for many persons to apply some emollient frequently to the lips to prevent drying and cracking throughout the year. Please omit name.

M.D., Texas.

Answer.—There seems to be reason to doubt the correctness of the statement that "workers in paraffin oils are particularly prone to cancer, especially at mucocutaneous junctions, as lip cancer." It seems to be established, however, that irritation of products arising in manufacture of paraffin may give rise to scrotal cancer. Clinical experience does not appear to suggest that it is dangerous to apply petrolatum to the lips.

TREATMENT OF BRONCHIAL ASTHMA

To the Editor:—In a case of bronchial asthma (no nasal trouble) during attack, would it be advisable to give adrenalin chloride and follow immediately with sodium iodide intravenously? I have been administering sodium iodide, 31 grains, to a patient intravenously, and he coming into the office wheezing. Please do not publish name.

M.D., Missouri.

Answer.—Symptoms of asthma are associated with a number of coincident and possibly causative conditions, such as nasal inflammations and polyps (excluded in this case), local bronchial pressure of lymph nodes at the hilum of the lungs, or hay-fever and allied protein sensitiveness. In other cases the asthma is not associated with demonstrable cause, and may have been present for years; a family tendency to asthma may be elicited. Emphysema and chronic or recurrent bronchitis are often found in persons subject to bronchial asthma. In the case described, it was wiser to give only the epinephrine hydrochloride. Iodides such as sodium iodide act favorably in bronchial asthma when given for a number of days or weeks. They are valuable in preventing the attacks rather than in relieving the immediate attack. Iodine is readily absorbed when given by mouth, and intravenous injection is usually unnecessary. Sodium iodide, 0.65 Gm. three times a day by mouth in a suitable vehicle, is often sufficient, though larger doses may be given if well tolerated by the patient. In all cases of asthma it is desirable to institute a thorough search for any possible cause, before concluding that one is dealing with an essential bronchial asthma.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARKANSAS: Little Rock, Nov. 9-10. Sec., Dr. James W. Walker, Fayetteville.

ARIZONA: Phoenix, Oct. 5. Sec., Dr. W. O. Sweek, Phoenix.

CALIFORNIA: Sacramento, Oct. 18-21. Sec., Dr. Charles B. Pinkham, 906 Forum Bldg., Sacramento.

COLORADO: Denver, Oct. 5. Sec., Dr. David A. Strickler, 1011 Republic Bldg., 16th and Tremont Sts., Denver.

CONNECTICUT: State Board of Healing Arts, New Haven, Oct. 9. Prerequisite to license examinations. Box 1895, Yale Station, New Haven. Medical Examining Board, Nov. 9-10. Sec., Dr. Robert L. Rowley, 79 Elm St., Hartford. Homeo. Medical Examining Board, Nov. 9. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

DISTRICT OF COLUMBIA: Oct. 12. Sec., Dr. Edgar P. Copeland, Suite 110, 1801 Eye Street, Washington.

FLORIDA: Tallahassee, Oct. 12-13. Sec., Dr. William M. Rowlett, Box 603, Tampa.

GEORGIA: Atlanta, Oct. 12-14. Sec., Dr. Luke Robinson, Covington.

HAWAII: Honolulu, Oct. 11-14. Sec., Dr. A. L. Davis, 1254 Emma St., Honolulu.

IDAHO: Boise, Oct. 5. Commissioner of Law Enforcement, Mr. F. A. Jeter, Boise.

ILLINOIS: Chicago, Oct. 5-7. Supt., Regis. and Education, Mr. V. C. Michels, Springfield, Ill.

IOWA: Des Moines, Nov. 16-18. Commissioner, Dept. of Health, Dr. Henry Albert, Des Moines.

KANSAS: Topeka, Oct. 12. Sec., Dr. Albert S. Ross, Sabetha.

MAINE: Portland, Nov. 9-10. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland.

MASSACHUSETTS: Boston, Nov. 9-11. Sec., Dr. Frank M. Vaughan, Room 144, State House, Boston.

MICHIGAN: Lansing, Oct. 12-14. Sec., Dr. Guy L. Connor, 707 Stroh Bldg., Detroit.

MINNESOTA: Minneapolis, Oct. 5-7. Sec., Dr. A. E. Comstock, 636 Lowry Bldg., St. Paul.

MISSOURI: Kansas City, Nov. 16-18. Sec., Dr. James Stewart, Jefferson City.

MONTANA: Helena, Oct. 5-7. Sec., Dr. S. A. Cooney, Helena.

NEVADA: Carson City, Nov. 1. Sec., Dr. Simon L. Lee, Carson City.

NEW JERSEY: Trenton, Oct. 19-20. Sec., Dr. Charles B. Kelley, Trenton.

NEW MEXICO: Santa Fe, Oct. 11-12. Sec., Dr. W. T. Joyner, Roswell.

RHODE ISLAND: Providence, Oct. 7-8. Sec., Dr. B. U. Richards, Providence.

SOUTH CAROLINA: Columbia, Nov. 9. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

TEXAS: Fort Worth, Nov. 16-18. Sec., Dr. T. J. Crowe, 918-919 Mercantile Bank Bldg., Dallas, Texas.

UTAH: Salt Lake City, Oct. 5. Director, Mr. J. T. Hammond, 412 State Capitol Bldg., Salt Lake City.

WEST VIRGINIA: Morgantown, Nov. 23. Commissioner, The Public Health Council, Charleston.

WYOMING: Cheyenne, Oct. 4-6. Sec., Dr. G. M. Anderson, Cheyenne.

Vermont June Examination

Dr. W. Scott Nay, secretary of the Vermont Board of Medical Registration, reports the written examination held at Burlington, June 23-25, 1926. The examination covered 12 subjects and included 90 questions. An average of 75 per cent was required to pass. Thirty-three candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Boston University School of Medicine	(1926)	83.1, 85.1, 88.5,	92.5
University of Vermont College of Medicine	(1925)	83.7, 87.1, (1926) 77.7, 78.5, 81.1, 81.5, 82.1, 83.1, 83.5, 83.8, 84.2, 84.3, 84.4, 85, 86.1, 87, 87.1, 88.2, 88.2, 88.8, 88.9, 89.3, 91.3, 91.3	
McGill University Faculty of Medicine	(1924)	78.3, (1925) 83, 87.1	85.1, (1926)
Dalhousie University Faculty of Medicine	(1921)		81.8

South Dakota January Examination

Dr. H. R. Kenaston, director, Division of Medical Licensure, South Dakota State Board of Health, reports the written, oral and practical examination, held at Pierre, Jan. 19-20, 1926. The examination covered 15 subjects and included 100 questions. An average of 75 per cent was required to pass. Eight candidates were examined, all of whom passed. Five candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Rush Medical College	(1921)	90.6, (1925)	89.9
State University of Iowa College of Medicine	(1924)		87.4
Creighton University College of Medicine	(1921)	88.9, (1924) 90.8,	92.9
University of Cincinnati College of Medicine	(1924)		89.8
University of Nebraska College of Medicine	(1924)		89.4

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Medical Evangelists	(1917)		Washington
Northwestern University Medical School	(1901)		Minnesota
University of Minnesota Medical School	(1912),	(1925)	Minnesota
Creighton University College of Medicine	(1915)		Colorado

North Dakota July Examination

Dr. G. M. Williamson, secretary of the North Dakota Board of Medical Examiners, reports the oral, written and practical examination held at Grand Forks, July 6-9, 1926. The examination covered 13 subjects and included 100 questions. An average of 75 per cent was required to pass. Eight candidates were examined, all of whom passed. Seven candidates were licensed by reciprocity. One candidate was licensed without examination. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Northwestern University Medical School	(1926)		79
Rush Medical College	(1926)		80
University of Minnesota Medical School	(1925)		80, 80.6
University of Manitoba Faculty of Medicine	(1926)	84.4,	84.5, 90
McGill University Faculty of Medicine	(1910)		82

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School	(1921)		Minnesota
University of Illinois College of Medicine	(1902)		Iowa
University of Minnesota Medical School	(1922),	(1926, 2)	Minnesota
John A. Creighton Medical College	(1909)		Nebraska
Vanderbilt University School of Medicine	(1915)		Georgia

College	LICENSED WITHOUT EXAMINATION	Year Grad.
Johns Hopkins University Medical Department	(1917)	

Book Notices

EDGAR'S PRACTICE OF OBSTETRICS: For Students and Practitioners of Medicine. By J. Clifton Edgar, Consulting Obstetrician to Bellevue Hospital, New York City. Revised by Norris W. Vaux, Clinical Professor of Obstetrics in the Jefferson Medical College, Philadelphia. Sixth edition. Cloth. Price, $8. Pp. 779, with 684 illustrations. Philadelphia: P. Blakiston's Son & Co., 1926.

The new edition of this book, revised by Norris W. Vaux, shows many changes. The illustrations are abundant, instructive and beautiful. The text indicates that the recent obstetric literature has been extensively consulted. While the book in general is well written, there are occasional unclear sentences which defy the laws of syntax; for example: "The case should be well advanced two to three fingers dilatation of cervix and hard severe contractions every 3 or 4 minutes" (p. 615). "There is a sliding lock on this model of forceps and the original article introduces one blade anteriorly under the symphysis and then turns the blade over so that the cephalic curve comes in approximation to the parietal bone, the posterior blade is readily applied to the posterior parietal area when traction is made and obliquity is promptly overcome and flexion is at once established with resulting descent and rotation" (p. 712). Excellent advice is given concerning the asepsis of the patient, the physician and the nurse. In severe cases of puerperal endometritis, the author advises digital examination of the uterine cavity with manual removal of débris and irrigation of the cavity with 50 per cent alcohol. This is contrary to the teaching of many obstetricians who believe that the best results in these cases are obtained by avoiding local manipulation and by building up the patient's resistance. In the discussion on anesthesia, ethylene is not mentioned, even though it has proved to be an efficient and relatively safe anesthetic for obstetric patients. Spinal anesthesia is discussed, but the use of local infiltration is not spoken of, although the latter is useful in some cases in which episiotomy is performed and in many cases of cesarean section. The type of episiotomy recommended is a small lateral incision which is too shallow to be of much use because it is only one-fourth inch in depth.

The administration of pituitary preparations in the first and second stages of labor is rightly condemned; but when

the author asserts that these preparations are "disappointing in the third stage and after for postpartum hemorrhage," and also that they are "of little value in abortions, atony of the bladder and distention," he is at variance with the experience of many who give pituitary extract as a routine after the delivery of the placenta and for cases of incomplete abortion, especially of the septic type. For incising the cervix, two lateral and two anteroposterior incisions are advocated. However, to avoid possible injury to the bladder, the uterine arteries and the ureters, it may be preferable to make three incisions at points corresponding to the 10, 2 and 6 on the clock. The author does not suture these incisions unless there is hemorrhage; but much subsequent cervical trouble can be avoided by immediate and proper suture of cervical incisions and lacerations, provided the conditions under which the repair is done are aseptic. Only three sentences are devoted to the Kielland forceps (incorrectly spelled Keeland in both text and index) although these forceps are useful in some difficult cases. Bimanual dilation of the cervix is praised highly for treating placenta praevia, even though farther on (p. 685), in the discussion of accouchement forcé, the author points out that "in placenta praevia the danger of uterine rupture and infection is a contraindication to the procedure." Manual dilation of the cervix is included in the author's definition of accouchement forcé.

Descriptions are given and illustrations shown of both the classic and extraperitoneal cesarean section; but the intraperitoneal or low, cervical cesarean section, which the author classes with the extraperitoneal operation, receives only one line despite the fact that this operation is the one now almost exclusively used on the continent and is rapidly gaining adherents in other parts of the world, including the United States. According to foreign literature, the extraperitoneal operation is rapidly falling into desuetude. The author frowns on the use of a catheter for aspirating mucus from the larynx. He believes the attempt to enter the larynx is barbarous and that the most that can be accomplished by aspiration is the removal of mucus from the lower part of the pharynx. It is a pity that statements of this kind should be made by an authority of high standing. In some hospitals a woven catheter varying in size from 10 to 15 on the French scale is passed not only into the larynx but also into the trachea of new-born babies with great frequency. The manipulation is relatively simple, practically harmless, and extraordinarily efficacious. Both De Lee and Williams in their textbooks speak of passing a catheter *into* the larynx. Tracheal catheterization and mouth to trachea insufflation are far safer and more effective than Schulze's swingings and the lungmotor, both of which are advocated by the author.

In spite of these criticisms, the book is a valuable contribution and will retain its place as one of the standard textbooks on obstetrics.

ANATOMIE CÉRÉBRALE LES NOYAUX GRIS CENTRAUX ET LA RÉGION MÉSENCÉPHALO-SOUS-OPTIQUE. Suivi d'un appendice sur l'anatomie pathologique de la maladie de Parkinson. Par Ch. Foix, professeur agrégé à la Faculté de médecine de Paris, et J. Nicolesco, assistant d'histologie à la Faculté de médecine de Bucarest. Cloth. Price, 100 francs. Pp. 581, with 62 illustrations. Paris: Masson & Cie, 1925.

This important and timely monograph is divided into three parts: There is a short but comprehensive general description of the anatomy of the parts under consideration sufficient for the clear understanding of what is to follow. This part ends with an alphabetical index, with definitions of the centers and tracts of this region, and a summary of general embryology. Then follows a topographic section consisting of a description of serial sections in three planes, horizontal, coronal and sagittal, illustrating fiber tracts and cell nuclei. The fiber tracts are illustrated by the reproduction of forty-eight photomicrographs of myelin stained sections. Each reproduction of a myelin stained section is faced by a schematic tracing naming the various structures that are illustrated. The cell nuclei are illustrated by thirty-four semidiagrammatic tracings. Accompanying the illustrations is a brief descriptive text. The third and most important part consists of a detailed study of each nucleus as a whole, its cytology, fiber tracts and connections. This part is profusely illustrated by reproductions of photomicrographs of myelin stained and cellular stained sections, diagrams, camera lucida drawings, and five beautiful plates in three colors illustrating the cell nuclei stained with Nissl stain. In an appendix the pathologic anatomy of Parkinson's disease is systematically described and analyzed. At this time, when the problem of muscle tone and the relation of the corpus striatum and pallidum to the function of motion is receiving attention from the neurologist, physiologist, pathologist and anatomist, this volume is most welcome. It is orderly, accurate, compact and logical. The subject matter is well arranged and so written that it is not only readily understood but exceedingly interesting as well. Pains, skill and material have not been spared by the publishers to produce a technically beautiful volume.

CHEMISTRY OF FOOD AND NUTRITION. By Henry C. Sherman, Ph.D., Sc.D., Mitchill Professor of Chemistry, Columbia University. Third edition. Cloth. Price, $3.25. Pp. 636, with 20 illustrations. New York: The Macmillan Company, 1926.

The extensive research now carried on in the field of diet and nutrition has prompted a third edition of this textbook, one that has already established itself as of great merit in the field it covers. Professor Sherman writes in a clear style on a subject to which he has contributed much original work of interest, and with a due realization of the requirements of various readers. His book is replete with tables and charts, and each of his facts is supported by a reference to a periodical citing the evidence on which the statement may be based. A valuable appendix contains a complete table of food compositions and caloric values, a list of foods containing vitamins A, B and C, and an aid to the interpretation of statistics. A carefully worked out index adds to the usefulness of a most useful book.

PRÉCIS DE RADIOTHÉRAPIE PROFONDE. Par Dr. Iser Solomon, radiologiste de l'Hôpital Saint-Antoine. Préface du Dr. A. Béclère, membre de l'Académie de médecine. Paper. Price, $2.40. Pp. 512, with 172 illustrations. Paris: Masson & Cie, 1926.

Heretofore, there has not been available any systematic treatise on radiotherapy. The present volume by Solomon is an attempt to provide such a treatise, and this attempt has been carried out with considerable success. The book, for which Béclère has provided the preface, deals with each branch of the subject in a semihistorical way and in this manner gives one a good background for the more recent work, which, in general, is adequately dealt with. The book is divided into two parts; the first part deals, in the order named, with the production and nature of roentgen rays, their physical and chemical properties, their biologic properties, qualitative measurement, quantitative measurement, tubes and kenotrons, high-tension generators and their accessories, tube stands and means of protection. The last two chapters of the first portion deal with the bases of radiotherapy, principally the biologic bases, and with the distribution of radiation in matter. The second portion takes up in a systematic way the action of radiation on different varieties of tumors, tuberculous conditions, certain diseases of the nervous system, blood and blood-forming organs, the glands of internal secretion, and miscellaneous diseases, such as gastric and duodenal ulcer, hypertrophy of the prostate, asthma, and Mikulicz' disease. Each variety of tumor or disease is discussed first from the clinical and pathologic, and then from the radiologic, standpoint. Under the latter, reference is made to the ideas of different specialists (almost entirely continental) on the question of technic. The work is a distinctly worthy addition to radiotherapeutic literature. The discussions of the various subjects, especially in the first portion of the book, are generally good. It is natural that the author, who has himself devised an ionization instrument for measuring roentgen rays—an instrument that has been generally adopted by French radiologists—should have a tendency to further his own instrument and the method based on it. This tendency, however, has been kept within reasonable bounds and has not prevented him from dealing fairly with other methods. The second portion of the book, while generally

sound, is perhaps not quite as good as the first portion. On reading it, one becomes conscious of several things, among which may be mentioned insufficient recognition of literature outside France and Germany, a tendency to exaggerate slightly the claims advanced in favor of radiotherapy and, here and there, evidence of unfamiliarity with recent advances in certain phases of clinical medicine, notably on the subject of hyperthyroidism. The title of the book itself is unfortunate in that it tends to consecrate an expression that should be discouraged. The word "deep" should have been omitted; and yet, after reading the book, one can understand its inclusion, because Solomon belongs to the group of radiologists who favor the use of roentgen rays generated at high voltage in the treatment of most conditions amenable to radiotherapy. Another deficiency is the form in which the bibliography is given, no index having been provided. That the well known action of radiotherapy on benign giant-cell tumors is not even mentioned was perhaps an oversight. On the whole, the book is a serious attempt to state in as fair a way as possible the present status of radiotherapy, except that portion which deals with the treatment of skin diseases, which is completely omitted. That the attempt has not been entirely successful is perhaps due to a tendency to overstress radiotherapy, thus throwing slightly out of focus the general balance of the work.

YOUNG'S PRACTICE OF UROLOGY. Based on a Study of 12,500 Cases. By Hugh H. Young and David M. Davis. With the Collaboration of Franklin P. Johnson. Volumes I and II. Cloth. Price, per set, $25 net. Pp. 1484, with 1003 illustrations. Philadelphia: W. B. Saunders Company, 1926.

On the basis of difference of personal opinion, doubtless many features of this work may be open to criticism; but, as the authors state frankly that this is a "detailed description of personal experiences and inventions," why should one presume to cavil with their statements? Furthermore, this work represents the results of a searching clinical study of an enormous amount of material, 12,500 cases, taken from the records of the Brady Urological Institute. Thousands of patients were seen or questioned by mail, and here is presented a digest of the results of this survey. Much space is devoted to personal work and activities in order to justify various procedures, mechanical devices and original researches which had their inception with the authors. But, then, this is said to be a record of personal experiences and inventions. Nearly all the illustrations are original; they are well made and serviceable, and they illustrate. The many tables presenting the results of analysis of the large amount of clinical material studied are interesting and informative. The many case reports lend much emphasis to points made in the text. In fact, the entire work fairly bristles with information. Even the teaching phase of urology has not been overlooked. A complete layout is given for a urologic department, its equipment and teaching facilities for graduates or postgraduates and undergraduates, with plan of instruction. Every phase of urologic practice is covered well and thoroughly. Especial mention must be made of the chapter on malformations and abnormalities of the urogenital tract. The extensive bibliographic references appended to each chapter are indicative of the thoroughness of the authors' work. They will be appreciated by all those who believe in scientific exactness and thoroughness. There is much to commend in this work.

NEUE KLINISCHE GESICHTSPUNKTE ZUR LEHRE VOM ASTHMA CARDIALE. Von Dr. Sigmund Wassermann. Paper. Price, 9.60 marks. Pp. 168, with 12 illustrations. Berlin: Urban & Schwarzenberg, 1926.

This is an attempt to explain some of the still obscure phenomena of cardiac asthma. The author regards this type of asthma as due, not to a giving out of the right heart, but rather to a functional insufficiency of the left ventricle and the direct influence of such insufficiency on the greater circulation and the central nervous system. This theme he supports by appeal to clinical, physiologic and pathologic facts. There is much of argument, often drawn out to tiresome length. Those interested in this subject, especially from its theoretical point of view, will find the work well worth study.

Medicolegal

Right to Permit to Conduct Roentgen-Ray Laboratory

(Sausser v. Department of Health of City of New York (N. Y.), 150 N. E. R.)

The Court of Appeals of New York says that the petitioner became the proprietor of a roentgen-ray laboratory which he desired to operate in the city of New York. Section 107 of the sanitary code of the city provided that:

> No person shall maintain, operate or conduct an x-ray laboratory . . . wherein radiographs are taken, diagnoses made or human beings examined or treated by x-rays, without a permit therefor issued by the board of health, or otherwise than in accordance with the terms of said permit and with the regulations of the said board.

Supplementary to this section, the board adopted a regulation providing that:

> Every x-ray laboratory shall at all times be in charge and under the direction of a duly licensed physician or other person whose knowledge, experience and qualifications to operate and use an x-ray machine are satisfactory to the health department.

The petitioner made an application for a permit under these regulations to enable him to conduct a laboratory. His petition, in effect, stated that the only operations that he desired to conduct were those of taking roentgenograms and not at all those of making diagnoses or treating patients, and his formal application, filed with the health department, sustained that claim. The correspondence with the department of health on his original application for a permit, and the affidavits filed in opposition to this application for an order of mandamus, made it plain, the court thinks, that the department of health and the courts had proceeded on an entirely different and inapplicable theory in denying his application. The correspondence and those affidavits conceded the petitioner's experience and skill as a roentgen-ray operator. They assumed, however, that the petitioner proposed to diagnose and treat diseases of the spine; that his status as a chiropractor was not recognized as giving him any standing in the medical profession or any qualifications for diagnosing and treating diseases, and that therefore his application should be denied. But this theory and view seemed to be entirely inapplicable as a reason for denying the permit which the petitioner desired. He did not propose to diagnose or treat, but only to take roentgenograms and explain what they showed in the way of obvious physical conditions of the spine, which roentgenograms would then be used if at all by some other person in connection with diagnosis and treatment. Certainly taking a roentgenogram is not diagnosis or treatment, nor does this court think that mere explanation of what that roentgenogram shows is diagnosis or treatment. A roentgenogram would not show much to an ignorant and inexperienced eye. To one who is skilful and has understanding, it would show a certain location or external condition of the spine, for instance, and this court does not think that the explanation of what was thus shown would go beyond the limits of roentgen-ray photography, any more than the explanation of what appeared to be a blotch or shadow on an ordinary photograph would go beyond the limits of ordinary photography. It may be conceded that the reading of a roentgenogram would be a slight and necessary step in diagnosis and treatment, but it would fall far short of what this court understands by those terms, which comprehend, not only knowledge of a certain condition such as would be shown by the roentgenogram, but, beyond that, medical or surgical consideration of what may have caused the condition presented to the eye and of the treatment that ought to be given to it.

It rather seems to be the case that the authorities and the courts had so concentrated their vision on the fact that the petitioner was a chiropractor of unrecognized standing in the medical profession that they had inadvertently overlooked the other fact that he was not urging his right to a limited permit because he was a chiropractor, but simply because he was a concededly experienced and skilled roentgen-ray pho-

tographer, and therefore qualified as that "other person" mentioned in the sanitary code to take roentgenograms. The respondent could not arbitrarily reject his application. There being no question that the petitioner was entitled to have his application for a permit to operate a laboratory for the purpose of taking and reading roentgenograms granted, and there being no dispute about the remaining facts, the orders appealed from should be reversed, and an order made directing the issue of such a permit.

Preconceived Medical Theories Not Determinative

(Wilkins v. Ben's Home Oil Co. et al. (Minn.), 207 N. W. R. 183)

The Supreme Court of Minnesota holds that compensation under the workmen's compensation act is not to be governed by preconceived medical theories, but by the evidence adduced in the particular case, interpreted according to the letter and spirit of the act. The claimant in this case undertook to help unload from a truck a barrel of lubricating oil weighing about 450 pounds. The barrel slipped and there was evidence that its whole weight was thrown against him; that he experienced a catch or pain in the lower part of the abdomen; that he emptied the oil from the broken barrel into another barrel from 20 to 25 feet away, using a 5-gallon pail; that he felt a "tapping," but no pain, while so doing, though when he went to move the barrel he had filled such a severe pain was felt that he had to desist and quit work. He immediately sought a physician, but found none until the next morning, when he was informed that he had a right inguinal hernia, for which he was operated on two days later. The physician testified that the hernia was a recent one, and that he had no doubt that the accident caused a tearing of the muscles, permitting the protrusion. Another physician, who had made a physical examination of the claimant two years before, testified that he then found no indication of hernia or weakness showing a tendency to hernia; that he was present at the operation and saw no sign of an old hernia. He also gave the opinion that the direct strain when the barrel slipped caused the injury. On the other hand, a physician who had made no examination of the claimant, on being called as a witness by the defendents and asked a hypothetic question, stated that the claimant's condition was a congenital, preexisting, potential hernia, and that the basis for the opinion was that there was no history of any direct violence received during the course of his employment producing any particular objective trauma to the site of the alleged injury; there was no evidence of ecchymosis, no history of a blow to that particular point, and there was no history of vomiting or nausea, or of immediate disability. He mentioned, as some of the various causes of hernia, coughing, straining at stool, direct blows, crushing injuries, and any particular condition causing intra-abdominal pressure.

The last six words, the court thinks, plainly supported the conclusion of the physicians who testified for the claimant, that the wrench or strain experienced when the heavy barrel slipped from his grasp caused an intra-abdominal pressure which produced the hernia. The court, furthermore, is of the opinion that the evidence in this case demanded findings in favor of the claimant, wherefore a decision to the contrary is reversed, and the case remitted to the industrial commission, with direction to make proper findings awarding compensation for the injury. Compensation claims are not to be determined on preconceived medical theories, but are to be considered on the evidence presented in the individual case, with a view to determine whether, under the definition of an accidental injury under the letter and spirit of the workmen's compensation act, the particular claim has been established by a fair preponderance of proof. Former decisions of this court sufficiently indicate that, in the determination of claims for accidental injuries causing hernia, the commission proceeds on the erroneous theory that no proof is sufficient, unless there is established adequate external force at the point of the hernia to produce rupture of the tissues evidenced by ecchymosis, immediate prostration, or other violent symptoms of injury.

Classification of Users of Roentgen-Ray Machines

(Alabama Power Co. v. Alabama Public Service Commission (Ala.), 107 So. R. 71)

The Supreme Court of Alabama affirms a judgment of the circuit court which affirmed an order of the public service commission directing the Alabama Power Company to classify users or operators of roentgen-ray machines as lighting customers and to charge them the corresponding rates, instead of classifying and charging them as retail power customers as theretofore. The power company contended that the evidence showed that to classify the roentgen-ray user as a ligthing customer rather than a retail power customer was unreasonable, in that it put him into a class to which he was less analogous, both as to the energy consumed by him and as to the facilities supplied and the service performed by the company, as well as in the use to which he put the current, and the manner in which he used it; and that such classification resulted in a rate for the roentgen-ray user, that on account of the small amount of energy consumed by him per month, in the face of the size of his demand, did not afford a fair return to the company on the investment necessary for standing ready to meet that demand, even according to the standards as fixed by the commission itself, in the rates prescribed for both lighting consumers and retail power consumers; and in that such classification resulted in a rate that was unduly preferential and unjustly discriminatory in favor of the roentgen-ray user and against all other classes of customers.

But while the company's expert witnesses testified that in their opinion the service for roentgen-ray machines required substantially larger wires, and a special and larger transformer for each machine, making a theoretical case for the company's contention, yet the evidence indicated that, as a practical proposition, such special equipment was not necessary, and for the most part had not been actually supplied. Again, on the issues or subsidiary postulates involved in the question of the fairness and propriety of imposing on roentgen-ray machine customers a "ready to serve" charge of $1.50 a month for each kilowatt of the machine's rated capacity, much testimony was offered on behalf of the company, and here against its contentions were supported by the opinions of expert witnesses, but in large measure contradicted by practical experience and concrete example. From all of this evidence, much of which was of a technical character, the supreme court is unable to say that these contentions were so well supported and established as to demonstrate clearly the unreasonableness or unfairness of the ruling and order of the commission with respect to the classification, rates and service here in question.

The technical accuracy of the classification complained of was not matter of controlling importance. The judgment of the supreme court is that the roentgen-ray machine is not a power machine in the ordinary sense, nor is it a lighting device in the ordinary sense, though it has features analogous to the two. The conclusion is that the order in question ought not to be set aside.

Refusing Albee or Hibbs Treatment—Judicial Knowledge

(Southern California Edison Co. v. Industrial Accident Commission et al. (Calif.), 243 Pac. R. 455)

The District Court of Appeal of California, second district, division 1, says that an employee of the Edison company sustained an injury to his back. It appeared from the record that the company repeatedly offered to provide, and urged a recommended operation, but from the outset the employee refused to submit to it. Apparently these offers by the company were more or less coincident with examinations made by several experts; hence the employee must justify his refusal, if at all, on the conditions as they existed at the time of his first or early refusal, and not on the conditions as they existed when his hearing before the industrial accident commission took place twenty-two months after the injury occurred, at which time, by reason of the "long standing of the case," one surgeon expressed some doubt as to the extent

of the beneficial results that might be obtained from the operation at that time. For if the delay in the operation militated against the probable beneficial results, the employee could not take advantage of his own conduct and thus penalize his employer that stood ready at all times to provide him with such treatment as competent expert medical and surgical authority advised.

Under subdivision (e) of section 11 of the workmen's compensation insurance and safety act of 1917 it became the duty of the commission to determine whether the employee's refusal to submit to the operation was reasonable or not. But in determining that question, which was of a judicial nature, the commission was not permitted to arrive at its conclusion from any preconceived ideas of the members of the commission. There must be a finding on this issue, based on "expert medical or surgical advice." The only expert medical or surgical advice before the commission, so far as the record disclosed, held to the opinion that the Albee treatment or the Hibbs operation would prove beneficial to the employee even if it did not result in his entire recovery; that no injurious consequences would flow from the operation even if the expectant hopes were not fully realized. There was no suggestion in this expert surgical and medical advice in the record that there was any risk involved in the operation, unless the commission might take judicial knowledge of what was involved in the operation known as the Albee or Hibbs treatment. The record nowhere disclosed the nature or character of this proposed treatment, nor whether it could be classified as a major or a minor operation; nor was there any evidence to show what if any inconvenience or pain would be suffered by the patient, or to what extent, if at all, he would be confined to his bed as a result of the operation.

This court cannot agree with the contention that the commission might take judicial cognizance of what was involved in the Hibbs or Albee treatment. Where the issue pertains to medical or surgical treatment, the nature, effect or result of which are subjects of common knowledge, such matters are within the rule of judicial knowledge, as, for instance, the court will take judicial notice of the nature, purpose and effects of vaccination. But where the matter is not one of common knowledge, but known generally only to medical experts, it must be proved by competent evidence just as any other issue of fact.

For the reasons indicated, the award made is annulled and the case referred back to the commission, with the instruction that, in making its award, there be excluded therefrom any compensation for disability, so far as caused, continued or aggravated by unreasonable refusal of the employee to undergo the recommended operation.

Unjustified Fear of Recommended Operation

(Palloni v. Brooklyn-Manhattan Transit Corporation (N. Y.), 214 N. Y. Supp. 430)

The Supreme Court of New York, appellate division, third department, says that the claimant in this proceeding under the workmen's compensation law was severely burned with hot water. His injuries were confined to a great extent to his legs. One week thereafter he met with an accident which produced a right inguinal hernia and aggravated a preexisting condition on the left side which was predisposed to a scrotal hernia. The findings were to the effect that both hernias were the direct result of the accident. The only objection raised was that the claimant had refused to undergo operative treatment for the relief of both hernias. The findings were to the effect that such refusal was reasonable. When the claimant was first sent to the hospital, he was still suffering from severe burns, which he had sustained the week prior, and his condition was such that, although he consented to an operation, the physicians did not think it was proper at that time to perform it. Four months later he was advised to have an operation, and was told by the referee that, unless he consented, he could not receive compensation. He was assured at that time that he would be relieved of any expense. In order to ascertain whether such operation was advisable, the physicians took two blood tests, the usual Wassermann test and a spinal test. The result of both was negative, and the physicians recommended an operation. The claimant refused to submit, giving as his reason that he was afraid; that he had two big holes in his back. The referee then explained to him the reason for the blood tests, and that they had shown his blood to be in suitable condition for an operation, but he still declined to submit to one, saying: "I betchar they kill me. They won't make operation. Me die." He admitted that his own physician had recommended an operation, and told him that it would be easy. There was but little testimony to show what degree of danger, if any, accompanies an operation for hernia, but there was the testimony of three physicians, all recommending it, and no proof to show that such an operation was fatal or dangerous. In view of the nature of the operation, there was evidently no cause for fear, which was the ground on which the claimant refused to submit, and was the ground on which the referee based his award. There was nothing in the record to show that the claimant's experience with the two blood tests justified his fright.

The attention of this court has not been called to any reported case in the state of New York defining the duty of a claimant with reference to an operation. It has been generally recognized, however, that, when such claim arises on a hearing in compensation court, it is the duty of the court to make a finding as to whether or not the claimant unreasonably refused. This in effect is a recognition of the fact that, if the refusal was unreasonable, compensation should be denied. This rule is well established in other jurisdictions. The question of reasonableness may be one of fact, and, if so found, is binding on this court, but in this case there was no dispute of fact. There was a single question, Was unjustifiable fright a reasonable ground for refusal to submit to an operation which had been recommended by physicians representing the claimant, the employer and the industrial board, and consequently presumed to be for the best interests of the claimant, especially where there was no proof that such operation was fatal or even dangerous? As a matter of law, it must be held that such fright alone was not a reasonable ground for refusal. Award reversed, and matter remitted to the industrial board to give the claimant an opportunity to submit to an operation.

Society Proceedings

COMING MEETINGS

American Association of Railway Surgeons, Chicago, Nov. 3-5. Dr. Louis J. Mitchell, 29 East Madison Street, Chicago, Secretary.

American College of Physical Therapy, Chicago, Oct. 18-23. Dr. R. W. Fouts, City National Bank Building, Omaha, Secretary.

American College of Surgeons, Montreal, Canada, Oct. 25-29. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.

American Public Health Association, Buffalo, Oct. 11-14. Mr. Homer N. Calver, 370 Seventh Avenue, New York, Executive Secretary.

Association of American Medical Colleges, Cleveland, Ohio, Oct. 25-27. Dr. F. C. Zapffe, 25 East Washington Street, Chicago, Secretary.

Association of Military Surgeons of the United States, Philadelphia, Oct. 14-16. Col. J. R. Kean, U. S. A., Ret., Army Medical Museum, Washington, D. C., Secretary.

Central States Pediatric Society, St. Louis, Oct. 22-23. Dr. H. T. Price, Westinghouse Building, Pittsburgh, Secretary.

Delaware State Medical Society, Dover, Oct. 12-13. Dr. W. O. La Motte, Industrial Trust Building, Wilmington, Secretary.

Inter-State Postgraduate Medical Association of North America, Cleveland, Oct. 18-22. Dr. W. B. Peck, 82 Stephenson Street, Freeport, Ill., Managing Director.

National Tuberculosis Association, Washington, D. C., Oct. 4-7. Dr. George M. Kober, 1819 Eye Street, N. W., Washington, D. C., Sec'y.

Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 11-14. Dr. Walter F. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.

Southern Medical Association, Atlanta Ga., Nov. 15-18. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Southern Minnesota Medical Association, Mankato, October 18. Dr. H. T. McGuigan, Redwing, Secretary.

Southwest, Medical Association of the, Kansas City, Mo., Oct. 11-14. Dr. E. H. Skinner, Rialto Building, Kansas City, Mo., Secretary.

Vermont State Medical Society, Burlington, Oct. 14-15. Dr. W. G. Ricker, 29 Main Street, St. Johnsbury, Secretary.

Virginia, Medical Society of, Norfolk, Oct. 12-15. Miss Agnes V. Edwards, 104½ West Grace Street, Richmond, Secretary.

Western Surgical Association, Duluth, Minn., Oct. 14-16. Dr. H. P. Ritchie, Lowry Building, St. Paul, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to The Journal in America for a period of three days. No foreign journals are available prior to 1921, nor domestic prior to 1923. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

172: 1-156 (July) 1926

*Etiology and Pathogenesis of Achylia Gastrica. K. Faber, Denmark. —p. 1.
*Physiology of Meltzer-Lyon Test. M. Chiray, Paris, and I. Pavel, Bucharest.—p. 11.
*Etiology and Pathology of Peptic Ulcer. S. Levine, Brooklyn, N. Y. —p. 22.
*Perverted Physiology of Stomach After Gastric Operations. G. de Takats, Chicago.—p. 45.
*Treatment of African Sleeping Sickness with Tryparsamide Administered Intramuscularly. J. C. King, Sona Bata, Belgian Congo. —p. 51.
*Staphylococcus Infection of Renal Parenchyma. P. W. Aschner, New York.—p. 63.
Hemorrhage. C. A. Mills, Cincinnati.—p. 71.
*Diagnostic Value of Color of Blood Serum in Pernicious Anemia. A. M. Fishberg, New York.—p. 81.
*Diagnostic Value of Kottmann Reaction in Thyroid Dysfunctions. I. Katayama, New York.—p. 84.
*Lack of Uniformity in Insulin Reaction. H. J. John, Cleveland. —p. 96.
Amphotropic Effects of Drugs on Vegetative Nervous System. Physiologic and Clinical Significances. E. Baráth, Budapest.—p. 107.
*Alleged Anthelmintic Property of Quisqualis Indica (Shih Chun Tze). K. K. Chen and H. Hou, Peking.—p. 113.
*Use of Lipiodol in Localization of Spinal Lesions. II. Effects of Injection Into Subarachnoid Space. F. G. Ebaugh and H. Mella, Denver.—p. 117.

Etiology of Achylia Gastrica.—Anatomic investigations lead Faber to the conclusion that achylia gastrica has nothing particularly remarkable in its etiology and pathogenesis which marks it out from the diseases of other organs. It is due to disease of the gastric mucous membrane with its extensive glandular apparatus. When it is excited through nervous channels, it can persist for only a short time; but apart from this it is due to the same causes that produce disease in other organs—direct irritation or hematogenous intoxication by bacterial toxins or autotoxins. With the exception, perhaps, of the initial stage of intoxication, the natural term for the disease is "gastritis," by which is to be understood, not the old conception gastric catarrh, but a disease of the glandular parenchyma of an inflammatory nature.

Physiology of Meltzer-Lyon Test.—Chiray and Pavel regard the Meltzer-Lyon as a functional test of the gallbladder. Henceforth, not only may these two points be determined, but the test will permit estimation of the contractile capacity of the wall of the gallbladder and reveal the presence of new syndromes of atony, stasis and perhaps hypertonus of the gallbladder.

Etiology of Peptic Ulcer.—Levine regards peptic ulcer as being the result of an erosion produced by mechanical, chemical or physical causes, circulatory and nervous disturbances, infection, and allergic phenomena. Erosions in the region of the "magenstrasse" do not heal readily because of its peculiar structure. Erosions are converted into peptic ulcers by the destructive action of the acid gastric juice. The isthmus, pyloric canal and first portion of the duodenum, because of the resistance they offer to the acid chyme, are particularly liable to be involved in ulcerative processes.

Physiology of Stomach After Gastric Operations.—Analyzing the functional results obtained by gastrojejunostomy, de Takats found that only 50 per cent of 274 patients obtained complete relief from the operation. In 22 per cent fair results, meaning occasional complaints, and in 28 per cent poor results, meaning recurring of symptoms or appearance of new symptoms, have been observed. Two hundred patients examined before and three weeks after the operation showed on the average that the free hydrochloric acid was lowered from 24 to 23 points, the total acidity from 54 to 46 points. There is, then, practically no lowering of acidity after the anastomosis. This observation is contrary to many other reports. In 200 cases of partial gastrectomy that were analyzed, the free hydrochloric acidity was lowered, on the average, from 30 points to 2 points, the total acidity from 56 points to 15 points. The mortality of resections compares favorably with those of the anastomosis. The danger of malignancy on the basis of ulcer is eliminated. In this series, 25 per cent of gastric ulcers showed histologic evidence of cancer. Perforation and hemorrhage of the ulcer that may both occur after an anastomosis is impossible. Out of eighty-five cases of pyloric exclusion, 30 per cent showed poor results. In various types of excision, such as cuneiform, longitudinal and sleeve resection, the danger of jejunal ulcer is eliminated. In forty-one cases, 20 per cent had poor results. In 6 per cent, recurrent ulcers could be demonstrated; in 5 per cent, symptoms of stenosis occurred. The conclusion is that gastric resection for ulcer, done in a satisfactory number of cases with equal indications for operation, compares favorably with anastomosis.

Use of Tryparsamide in Trypanosomiasis.—King says that tryparsamide is well tolerated in 20 per cent solution given intramuscularly, but in 30 per cent solution causes more discomfort and leads sometimes to abscess formation. It has a definite trypanocidal action in the blood, the lymph and cerebrospinal fluid. With the exception of a certain type of previously treated chronic case, tryparsamide, given by the intramuscular route, is a specific in trypanosomiasis incited by *Trypanosoma gambiense*. Tryparsamide is equally efficacious in all stages of the disease, except in certain cases previously treated with arsenical and antimony preparations, in which its efficiency is limited. There is a definite correlation between clinical symptoms, number of cells in cerebrospinal fluid, and weekly treatments of tryparsamide, which may be thus expressed: The number of cells in the cerebrospinal fluid varies inversely, and the clinical symptoms improve directly, with the number of weekly injections.

Staphylococcus Infection of Renal Parenchyma.—Aschner analyzes sixty-one cases of staphylococcus infection of the kidney. The infection is usually metastatic from a boil, carbuncle, paronychia or other peripheral lesion. In the acute cases, perinephric suppuration develops early and the diagnosis is relatively easy. In the subacute and chronic cases the clinical manifestations are so variable as to simulate various types of thoracic, abdominal and spinal disease. The absence of striking urinary symptoms and urinary changes, the indeterminate results of cystoscopic and bacteriologic examinations, all tend to make the diagnosis of cortical abscess or carbuncle of the kidney a difficult one. The prognosis with proper surgical therapy in young adults is excellent. In children and in older adults it is a graver condition, particularly if other metastatic lesions or venous involvement occur. Nephrectomy is necessary in a few cases, such as those with widespread involvement of the renal parenchyma and persistent bacteremia.

Color of Blood Serum in Pernicious Anemia.—In the active periods of pernicious anemia, Fishberg has found that the blood serum is more highly pigmented than normally, being golden, golden brown, or rarely even dark brown. This is due to an increase in the bilirubin content and to the presence of hematin. In an anemic patient the presence of pale blood serum speaks definitely against the diagnosis of pernicious anemia. Observation of the serum color is said to be of particular value in the differential diagnosis between secondary anemia due to carcinoma and pernicious anemia.

Diagnostic Value of Kottmann Reaction.—From the data reported by Katayama, it is evident that the results of the Kottmann reaction are not in accord with the basal metabolism or the glucose tolerance. The retardation of the reduction of the silver iodide to silver occurs in many and various conditions patently not due to hyperthyroidism. Its diagnostic value in detecting hyperfunction or hypofunction of the thyroid is very dubious. It cannot be accepted as a substitute for the determination of the basal metabolic rate or of the glucose tolerance.

Lack of Uniformity of Insulin Reaction.—Clinical observation has convinced John that the response to the administration of uniform doses of insulin varies considerably in the same and in different patients, under uniform conditions as to the diet, and as to the relation of the time of administration to the ingestion of food.

Quisqualis Indica Not Anthelmintic.—The drug shih chun tze, or *Quisqualis indica*, fam. *Combretaceae*, has long been known in China as a powerful anthelmintic. Chen and Hou tested its efficacy in *Ascaris* infestation and found that neither the gum isolated from the seed nor the whole seed (raw or baked) of *Quisqualis indica* has any anthelmintic action for ascariasis.

Effect of Injection of Iodized Oil.—In the thirteen cases studied by Ebaugh and Mella there appeared to be no doubt that the injection of lipiodol produced a fairly severe aseptic meningitis, but these changes are of transient duration and should not contraindicate the use of lipiodol to supplement preliminary neurologic examinations. The systemic effects noted in several cases likewise were transient and do not appear to be of sufficient severity to contraindicate the use of iodized oil. No prolonged subjective complaints or permanent residuals have followed this operation.

American Journal of Obstetrics and Gynecology, St. Louis

12: 1-158 (July) 1926

Biomechanism and Pathology of Ectopic Pregnancy: Clinical Phenomena. M. R. Robinson, New York.—p. 1.
Differentiation of Cancer Tissue. J. E. Davis, Detroit.—p. 29.
*Puberty Hemorrhage. S. A. Wolfe, New York.—p. 45.
Normal and Pathologic Physiology of Pregnancy. H. Ehrenfest, St. Louis.—p. 58.
*Sterility Associated with Habitual Amenorrhea Relieved by Roentgen-Ray Therapy. I. C. Rubin, New York.—p. 76.
*Conservative Treatment of Uncomplicated Retrodisplacement of Uterus. P. B. Bland, Philadelphia.—p. 89.
Air Insufflation of Tubes. P. Graffagnino, New Orleans.—p. 98.
Sarcoma of Stomach. G. F. Chandler, Kingston, N. Y.—p. 101.
*Intravenous Magnesium Sulphate Treatment of Eclampsia. E. M. Lazard, J. C. Irwin and J. Vruwink, Los Angeles.—p. 104.
Breast Cancer Metastasis. W. A. Coventry, Duluth, Minn.—p. 113.

Puberty Hemorrhage.—Puberty hemorrhage, Wolfe says, is a definite clinical entity occurring as a menorrhagia or metrorrhagia in the absence of inflammation, neoplasia or the pregnant state. The soft patulous cervix is pathognomonic; the body may or may not be enlarged. Symptoms recur after curettage but are always controlled by radium. Curettings are abundant, thickened and frequently polypoid. This is the result of a diffuse glandular, stromal and vascular hyperplasia. Persistence of solitary ripening follicles or simultaneous maturation of multiple follicles accentuates a physiologic endometrial hyperplasia into a pathologic type. Corpus luteum formation is absent. The uterus is the direct seat of bleeding. It results from thrombosis of the endometrial vessels and ensuing necrobiosis, and from actual mechanical rupture of engorged capillaries.

Roentgenotherapy of Habitual Amenorrhea.—Rubin has found that habitual amenorrhea is associated with sterility in about 5 per cent of cases. Pregnancy takes place in about 5.5 per cent of the untreated cases. In nine out of twelve cases treated with mild doses of roentgen ray, pregnancy resulted (i. e., 75 per cent of the treated cases). Only one of these patients aborted. The rest carried to full term and gave birth to normal children. Roentgen-ray irradiation of the ovaries resulted in restoration of the menses in eleven out of twelve cases of amenorrhea. Roentgen-ray irradiation of the hypophysis area and the thyroid appears to have an adjuvant value. Two of the pregnant and two of the nonpregnant women received hypophysial irradiation. One pregnant woman also received thyroid irradiation. Peruterine tubal insufflation and endocrine therapy are additional aids to the therapeutic action of the roentgen rays in cases of amenorrhea associated with sterility. As the ovaries were found to be definitely enlarged before treatment in eight of the nine successful cases treated with roentgen rays, careful examination with regard to this point may prove of aid in selecting the cases of amenorrhea associated with sterility suitable for ovarian stimulation. When no ovarian enlargement is found, irradiation of the hypophysial area or the thyroid, etc., may be more advisable and should certainly precede irradiation of the ovaries.

Treatment of Displacement of Uterus.—Bland does not believe that a simple antedisplacement, one regarded as beyond the so-called natural anteflexion, is capable of exciting symptoms. Further, except in very rare instances, a simple displacement of the uterus is not worth treating. The only type of displacement that one may legitimately place in the category of a surgical displacement is the large hyperplastic uterus, or the large chronically inflamed adherent uterus or the pathologic prolapsed uterus. In these, considerably more surgery than simply shortening the round ligaments or fixing the uterus forward is called for. A grossly maldeveloped anteflexed uterus will remain maldeveloped and probably anteflexed forever, irrespective of any type of treatment.

Magnesium Sulphate Treatment of Eclampsia.—Lazard et al. present a collective report of 142 cases, from which it appears that intravenous administration of magnesium sulphate in sufficient dosage will prevent the development of convulsions and will control them after their onset. A series of cases of eclampsia is presented which, under the intravenous magnesium sulphate treatment, shows a corrected mortality of 9 per cent. The true nephritic type shows the greatest mortality. Surgical intervention in eclampsia should be limited to assisting labor (in the second state) on definite obstetric indications. Cesarean section in eclampsia is contraindicated except in the presence of absolute obstetric indications.

American Journal of Roentgenology and Radium Therapy, New York

16: 1-100 (July) 1926

Clinical Significance of Ileal Stasis: Association with Colitis. J. L. Kantor, New York.—p. 1.
Chronic Ulcerative Colitis. J. A. Bargen, Rochester, Minn.—p. 10.
Roentgenologic Findings in Ulcerative Colitis. R. D. Carman and A. B. Moore, Rochester, Minn.—p. 17.
Freiberg's Infraction of Metatarsal Head. K. T. Meyer, Evansville, Ind.—p. 20.
Roentgen-Ray Treatment of Keloid. G. W. Grier, Pittsburgh.—p. 22.
Measurement of Roentgen-Ray Quality by Means of Photographic Determination of Half Value Layer. W. H. Meyer, New York.—p. 26.
Significance of Histologic "Malignancy Index" for Prognosis and Treatment of Carcinoma of Cervix Uteri. H. Schmitz, W. Hueper and L. Arnold, Chicago.—p. 30.
Influence of Back-Scattering on Surface Dose in Roentgen-Ray Therapy. O. Glasser, New York, and G. S. Reitter, Orange, N. J.—p. 43.

Boston Medical and Surgical Journal

195: 299-342 (Aug. 12) 1926

Management of More Common Fractures. A. W. Allen, Boston.—p. 299.
Health Advice: What Does Public Want and Need? D. B. Armstrong, New York.—p. 305.
Treatment of Insane. H. R. Viets, Boston.—p. 310.
*Dietetic Treatment of Epileptics. L. P. Clark, New York.—p. 311.
Aluminum and Potassium Nitrate Poultice. E. J. Sawyer, Andover, Mass.—p. 314.

Dietetic Treatment in Epilepsy.—Clark sees no justification for exploiting any particular diet for general application in the management of epilepsy. He says that common sense avoidance of foods that tend to produce gastric or intestinal indigestion, with due regard for individual peculiarities in the tolerance of certain articles, must continue to be the guide in the selection of the appropriate diet for epileptic patients.

California and Western Medicine, San Francisco

25: 145-288 (Aug.) 1926

Tuberculosis. J. W. Cook, Banning.—p. 177.
Postural Development of Infants: Walking and Proper Shoeing. C. Sweet, Oakland.—p. 181.
Care of Eyes in Middle and Later Life. E. Jackson, Denver.—p. 183.
Favus. K. P. Frost and G. F. Koetter, Los Angeles.—p. 186.
Operative Treatment of Rupture of Male Urethra. F. Farman, Los Angeles.—p. 188.
Electrodesiccation and Electrocoagulation for Destroying Benign and Malignant Skin Lesions. E. K. Stratton, San Francisco.—p. 192.
Anomalies, Diseases and Injuries of Spine. J. P. Kerby, Salt Lake City.—p. 196.

Bismuth in Antisyphilitic Treatment. S. Ayres, Jr., Los Angeles. —p. 198.
Enlargment of Prostate: Results Obtained by Modification of Young's Perineal Prostatectomy. F. Hinman, San Francisco.—p. 201.
Predisposing Factors to Pelvic Relaxation and Prolapse. J. Vruwink, Los Angeles.—p. 206.
Complications Following Prostatectomy. J. C. Negley, Los Angeles. —p. 208.
*Giant Cell Tumors not Connected with Bones. L. D. Campbell, Loma Linda.—p. 212.
Gaucher's Disease. H. J. Hara, Moneta, and F. R. Guido, Chicago. —p. 215.
Fat Embolism of Brain. N. Miller, Salt Lake City.—p. 215.
Congenital Absence of Lower Portion of Rectum and Anus. P. R. Walters, Dinuba.—p. 217.
Internal Hemorrhoids in Infant. L. A. Clary, San Francisco.—p. 218.

Giant Cell Tumors.—Campbell reviews the pathology of this comparatively rare condition, and reports three new cases. Since the one constant and salient feature is the presence of giant cells, and since the real nature is undetermined, it is suggested that the simple term "giant cell tumor" of tendons, etc., might be employed in this class of growths. The descriptive adjective "xanthic" could be used when "foam cells" and yellow color are found. The term "sarcoma" is misleading and should not be used. Since their benign character has been established, amputation is to be avoided and local conservative treatment advised.

Colorado Medicine, Denver

33: 259-292 (Aug.) 1926

Centenary of Death of Réné Theophile Hyacinthe Laënnec. H. J. Corper, Denver.—p. 261.
Influence of Louis on American Medicine. H. Sewall, Denver. —p. 269.
Villemin and Transmissibility of Tuberculosis. J. J. Waring, Denver. —p. 276.
Goiter: Surgical Viewpoint. S. D. Van Meter, Denver.—p. 282.

Illinois Medical Journal, Oak Park

50: 1-40 (July) 1926

Criminology as Related to Endocrinology. W. Engelbach, St. Louis. —p. 24.
Use of Colloidal Gold in Inoperable Cancer. E. H. Oehsner, Chicago. —p. 30.
Factors in Reduction of Typhoid Fever in Chicago. J. D. Robertson, Chicago.—p. 40.
Diaphragmatic Hernia. J. W. Dreyer, Aurora.—p. 47.
Relation of Women's Clubs to Organized Medicine and Public Health Movement. L. K. Sadler, Chicago.—p. 52.
Lymphosarcoma of Appendix with Nonrotated Cecum. E. Friend, Chicago.—p. 55.
Value of Dental Radiograph in Detecting Chronic Periapical Infection. R. L. Haden, Kansas City, Mo.—p. 62.
Doctor and Law. E. W. Rawlins, Chicago.—p. 66.
Early History of District Medical Society of Central Illinois. J. H. Miller. Pana, Ill.—p. 67.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

28: 157-315 (Aug.) 1926

Effects of Epinephrine on Response of Frog Heart to Stimulation of Accelerator Nerve. O. W. Barlow and T. Sollmann, Cleveland. —p. 157.
Effect of Epinephrine and Prolonged Accelerator Stimulation on Response of Frog Heart to Stimulation of Cardio-Inhibitory Nerve. T. Sollmann and O. W. Barlow, Cleveland.—p. 159.
*Blood Chemistry and Histopathology of Kidneys After Experimental Bismuth Injections. H. Brown, E. R. Saleeby and J. F. Schamberg, Philadelphia.—p. 165.
Effects produced on Secretion of Succus Entericus by Liver Injury and Pancreatectomy. W. Koskowski and P. Stradin, London.—p. 171.
*Antidiuretic Action of Pituitary. A. McFarlane, Edinburgh.—p. 177.
*Studies on Vomiting. H. Gold and R. A. Hatcher, New York.—p. 209.
Effect of Cocaine on Iris Compared with Effect on Other Structures Containing Smooth Muscle. G. H. Miller, Iowa City.—p. 219.
Toxicity of Arsine-Tri-1-Piperidinium Chloride. C. S. Leonard, Madison, Wis.—p. 233.
*Effect of Morphine and Some Other Opium Alkaloids on Muscular Activity of Alimentary Canal. II. Influence of Continued Administration of Morphine and of Withdrawal on Contractions of Small Intestines of Dogs. G. H. Miller and O. H. Plant, Iowa City. —p. 241.
Comparative Physiologic Action of Some Derivatives of Guanidine. G. A. Alles, Pasadena, Calif.—p. 251.
Effects of Trivalent and Pentavalent Arsenic on Heart Pulsations of Silkworm. F. L. Campbell, Cambridge, Mass.—p. 277.
Pharmacology of Denervated Mammalian Muscle. II. Some Phenomena of Antagonism, and Formation of Lactic Acid in Chemical Contracture. H. S. Gasser and H. H. Dale, London.—p. 287.

Effect of Bismuth on Kidneys.—These studies by Brown et al. indicate that bismuth is a drug of relatively low toxicity. As high as 30 mg. per kilogram (nine times the therapeutic dose for the human species) was injected into rabbits without producing an alteration in the blood chemical reactions indicative of nephritis or histologic evidence of material kidney injuries.

Antidiuretic Action of Pituitary.—From the observations made by McFarlane it would appear that the antidiuretic action of pituitary is located in the kidney and is in all probability associated with changes in the activity of the tubules.

Nature of Vomiting.—Observations have been made by Gold and Hatcher on the behavior of the diaphragm, the rôles of inspiratory and expiratory efforts, and the point in the respiratory cycle at which the glottis closes during retching and vomiting in the dog and cat under conditions as nearly normal as possible. The glottis of the cat and dog closes at the end of expiration or at the very beginning of inspiration, with the diaphragm high up, before the first retching movement in normal vomiting. Retching consists of a series of spasmodic abortive respiratory movements with the glottis closed, during which an inspiratory effort of the chest muscles and diaphragm occurs simultaneously with (expiratory) spasmodic contraction of the abdominal muscles. The diaphragm remains in the expiratory position throughout the entire period of retching. It contracts spasmodically simultaneously with the spasmodic contractions of the abdominal muscles with each retching movement. It usually descends very little, though it may descend more if the glottis is not completely closed.

Effect of Morphine on Intestinal Tract.—Miller and Plant assert that the stimulation of the intestinal muscles by morphine does not disappear when the drug is administered continuously for several weeks. Very small doses continue to produce the reaction after daily administration during six weeks. Small amounts still produce a distinct reaction when ascending doses have been administered for ten weeks. These results indicate that other factors than increased destruction of the drug by the tissues play an important part in the development of morphine tolerance.

Laryngoscope, St. Louis

36: 467-544 (July) 1926

Microscopic Study of Various Pathologic Conditions of Ear. F. A. Bridgett, Philadelphia.—p. 467.
Diseases of Nasal Accessory Sinuses Coexisting with Intracranial Conditions: Cases. A. Lobell, New York.—p. 505.
Ethmoid Bone: Cavity in Plate; Long Bone Structure. E. S. Hallinger, Camden, N. J.—p. 509.
Cholesteatoma: Cases. G. B. Trible and A. P. Tibbets, Washington, D. C.—p. 512.
Substitute for "Argyrol Pack." J. B. H. Waring, Blanchester, Ohio. —p. 516.
Lateral Cervical Fistulas. R. Kramer, New York.—p. 517.
Nasal Ointment Syringe. J. B. H. Waring, Blanchester, Ohio.—p. 523.
Instrument to Facilitate Eustachian Tube Catheterization. L. K. Pitman, New York.—p. 525.

Michigan State Medical Society Journal, Grand Rapids

25: 371-426 (Aug.) 1926

Statistical Study of Scarlet Fever. M. P. Isaminger, Ann Arbor. —p. 371.
Dubois Health Center Demonstration of Tuberculosis Society of Detroit and Wayne County. D. S. Brachman, Detroit.—p. 375.
Conservatism in Treatment of Hand Injuries. D. C. Durman, Detroit. —p. 381.
Periodic Medical Examinations of Apparently Healthy. A. M. Shaeffer, Jackson.—p. 384.
*Lymphangioma of Tongue. C. L. Straith, Detroit.—p. 386.
Experience with Scarlet Fever Antitoxin. V. F. Huntley, Lansing. —p. 388.
Improvised Fracture Table. D. H. Duffie, Central Lake.—p. 389.

Lymphangioma of Tongue.—Straith reports a case of lymphangioma involving the entire tongue in a child who was born with an enlarged tongue. It had remained abnormally large and was subject to frequent attacks of inflammation, during which the tongue would enlarge considerably, bleed occasionally and eventually subside, leaving it slightly larger after each attack. It was noted that the attack occurred during the engorgement stage accompanying the eruption of the teeth. The attacks were accompanied by a rise in temperature, irritability and considerable difficulty in nursing. In fact, the

child could be fed only by pressing the tongue down with a cup and pouring liquids into the mouth. As it was thought that an abscess might be forming in the tongue, it was incised; but no improvement resulted. Three weeks after the original operation, the child contracted erysipelas and died on the fourth day following. Pathologic examination of the tongue revealed large cystic areas filled with necrotic material; dilated blood and lymph vessels and considerable round-cell infiltration, corresponding closely to the pathologic description as given by Butlin.

Minnesota Medicine, St. Paul

9: 431-488 (Aug.) 1926

*Periduodenitis. E. P. Quain, Bismarck, N. D.—p. 431.
*Relation of Subperitoneal Fat to Abdominal Hernia. C. A. Roeder, Omaha.—p. 441.
Unilateral Fused Kidney. P. F. Donohue, St. Paul.—p. 448.
Diagonal End-To-Side Intestinal Anastomosis. A. N. Collins, Duluth. —p. 451.
Pericarditis. M. McC. Fischer, Duluth.—p. 453.
Amnesia: Eight Cases. E. M. Hammes, St. Paul.—p. 456.
Hydrocephalus. E. W. Johnson, Bemidji.—p. 463.
Medical Legislation. E. Klaveness, Monticello.—p. 467.

Periduodenitis.—Duodenojejunostomy for periduodenitis by transmesocolic methods has been made by Quain on ten patients. The principal symptoms in all these cases were headache, epigastric pain after meals, nausea and bile emesis. The duration of the disease had been "from childhood" in four patients and from five to fourteen years in six. Medical, postural and dietetic treatments were tried in all cases before operation was advised. The results to date have been highly satisfactory.

Relation of Subperitoneal Fat to Hernias.—According to Roeder, the rôle of subperitoneal fat in sliding hernias of the sigmoid deserves some attention; and subperitoneal fat as one of the primary factors in early and late postoperative hernias is a possibility.

Missouri State Medical Association Journal, St. Louis

23: 285-320 (Aug.) 1926

*Poliomyelitis. F. C. Neff, Kansas City.—p. 285.
Cutaneous Manifestations of Acquired Syphilis. N. Tobias, St. Louis. —p. 287.
*Prognosis in Cardiovascular Syphilis. P. F. Stookey, Kansas City. —p. 292.
Radiotherapy of Nonmalignant Conditions of Uterus. C. O. Donaldson, Kansas City.—p. 294.
*Neurologic Aspect of Pernicious Anemia: Etiology. A. L. Skoog, Kansas City.—p. 296.
Immunity. A. J. Chalkley, Lexington.—p. 299.
Should Optometrists be Recognized by Medical Profession? D. J. Walter, Rolla.—p. 301.

Treatment of Poliomyelitis.—The early treatment of poliomyelitis is thus summarized by Neff: complete rest in bed with the extremities in the most comfortable and supported position; anodynes when needed; if the spinal fluid is markedly increased, lumbar puncture to be done daily as long as this is the case; intramuscular use of from 10 to 20 cc. of human convalescent serum on the early days of the disease.

Prognosis in Cardiovascular Syphilis.—Stookey states that the prognosis in cardiovascular syphilis is so intimately associated with the individual response to antisyphilitic medication that it can be formulated only after long continued administration of antisyphilitic medication. In his hands the best results have been obtained from small doses of mercury and potassium iodide administered over a long period of time.

Neurologic Aspect of Pernicious Anemia.—Skoog believes that pernicious anemia has its origin in some deviation from the normal in the vegetative nervous system. The derangement may be purely physiologic for an early period. This could account for the early defect in the secretions of the alimentary tract, especially the achylia and achlorhydria, and secondary atrophic states found later in the secretory glands. Following this there would appear abnormal changes in the intestinal flora and the formation of various toxins. These chemical products elaborated in the intestinal tract may be absorbed slowly into the circulation and insidiously produce the profound anatomic changes in the spinal cord and brain, peripheral nerves, blood and bone marrow. Of the three great prevertebral plexuses in the chain of the vegetative nervous system, attention might be focused on the solar plexus for an impaired function. The solar plexus, with its many small branches and terminal plexuses around the aorta and its smaller vessels, innervates the abdominal viscera. The other plexuses, cardiac and hypogastric, are not as attractive when searching for the source of the earliest trouble. Anxiety and worries regarding problems of life, together with an age of declining functions with slow tissue decadence, should engage attention.

Send for Dr. Youmans

New Jersey Medical Society Journal, Orange

23: 329-380 (July) 1926

Syphilis an Important Cause of Delayed Resolution in Acute Pneumonia. T. Fitz-Hugh, Jr., Philadelphia, and R. D. Anderson, Burlington, N. J.—p. 334.
Cancer of Terminal Colon. H. B. Stone, Baltimore.—p. 338.
Surgical Problems of Jaundice. I. S. Ravdin, Philadelphia.—p. 341.
Hepatic Function. H. E. Ravdin, Philadelphia.—p. 346.
Obstetric Service of Orange Memorial Hospital. A. W. Bingham. East Orange.—p. 348.

New Orleans Medical and Surgical Journal

79: 83-154 (Aug.) 1926

Acute Pyogenic Infections of Bones and Joints. E. D. Fenner, New Orleans.—p. 83.
Endocrines in Pathogenesis and Therapy. H. J. Achard, Glendale, Calif.—p. 92.
Intra-Ocular Manifestations of Systemic Diseases. W. S. Sims, Jackson, Miss.—p. 102.
*Precipitin Test for Diagnosis of Syphilis. H. W. Butler, New Orleans. —p. 105.
Further Fallacies of Sheppard-Towner Propaganda. W. C. Woodward, Chicago.—p. 107.
Extra-Ocular Foreign Bodies. C. Cheek, Springfield, Mo.—p. 110.
Kahn Precipitation Test. C. A. Palmerlee, Jackson, Miss.—p. 113.
*Mild Epidemic of Jaundice in Louisiana. J. H. Musser and C. J. Miangolarra, New Orleans.—p. 114.
Shall General Practice of Medicine be Considered a Specialty? J. A. Rayburn, Ecru, Miss.—p. 119.
Dercum's Method of Treating Neurosyphilis: D. L. Kerlin, Shreveport, La.—p. 123.
Color Acuity: Test. M. E. Brown, New Orleans.—p. 127.
Pyelitis in Children. P. Y. Gillespie, Greenwood, Miss.—p. 129.

Precipitin Test for Diagnosis of Syphilis.—A modification of the precipitin test is presented by Butler which shows a high degree of selectivity for Wassermann positive bloods. The specificity of the test resides entirely within the antigen. It has been possible to produce an antigen whereby certain new features are added to the test. Inactivation of the serum is unnecessary, and the results are immediate and easily read with the unaided eye.

Infectious Jaundice in Louisiana.—Musser and Miangolarra report fourteen cases of infectious jaundice that occurred about the time of the year (fall) in which epidemic jaundice is likely to occur. In six cases there was a history of direct contact with some person who had an attack of jaundice. Direct contact apparently played the most important rôle in the production of this mild epidemic, as no other etiologic factor could be discovered.

Northwest Medicine, Seattle

25: 399-456 (Aug.) 1926

*Relation of Gastro-Intestinal Tract to Pernicious Anemia. A. C. Ivy, Chicago.—p. 399.
Plastic Surgery: Faciomaxillary. J. H. Harter, Seattle, Wash.—p. 404.
Id. T. F. Mullen, Pocatello, Idaho.—p. 408.
Basal Metabolism. W. G. Richards, Billings, Mont.—p. 416.
Relationship of Iodine to Human Thyroid. J. E. Else, Portland, Ore.— p. 419.
*Operative Cases of Goiter. T. M. Joyce, Portland, Ore.—p. 423.
Applications of Physiotherapy. C. A. Smith, Seattle, Wash.—p. 427.
Sex Problems in Children: Masturbation. H. M. Grant, Portland, Ore. —p. 432.
Congenital Mixed Tumor (Sarcoma) in Kidney Region. L. H. Smith, Portland, Ore.—p. 436.

Relation of Gastro-Intestinal Tract to Pernicious Anemia.—Evidence is presented by Ivy which strongly suggests a causal relationship between the gastro-intestinal tract and pernicious anemia. The evidence is sufficient to indicate definitely the administration of hydrochloric acid with and after meals to patients who have a persistent achlohydria. Evidence is offered bearing on the production of gastro-intestinal hemolytic toxins as related to anemia.

Results of Operations on Thyroid.—Joyce reports on a total of 923 operations for goiter with twenty-two deaths, a mortality of 2.3 per cent. Of these, 851 were thyroidectomies, seventeen deaths resulting, a mortality rate of 1.9 per cent and seventy-two were ligations with five deaths, a 7 per cent mortality. Resections on exophthalmic goiters had a mortality of 2.4 per cent; ligations on exophthalmic goiters had a mortality of 7 per cent. Resections on toxic adenomas gave a mortality of 1.8 per cent.

Ohio State Medical Journal, Columbus

22: 658-736 (Aug.) 1926

Toxic Goiter and Hyperthyroidism. C. R. Steinke, Akron.—p. 677.
Surgical Significance of Choked Disk. E. C. Cutler, Cleveland.—p. 680.
Hay Fever: Diagnosis and Treatment. K. D. Figley, Toledo.—p. 686.
Pathologic Conditions of Urinary Tract Simulating Abdominal Disease. J. A. H. Magoun, Jr., and P. W. Foster, Toledo.—p. 692.
Tetanus. J. L. Webb, Carbon Hill.—p. 694.
Administration of Sheppard-Towner Act in Ohio. H. E. Kleinschmidt. —Columbus.—p. 697.

Public Health Journal, Toronto, Canada

17: 321-370 (July) 1926

What is New in Tuberculosis. R. E. Wodehouse.—p. 321.
Diet and Hygiene of Pregnancy from Nurse's Standpoint. E. L. Smellie. —p. 334.
Epidemic of Diphtheria in Scarboro Township. C. D. Farquharson.—p. 343.
Scarlet Fever Immunization. J. Miller.—p. 345.
Transfer of Infection by Handshakes. H. W. Hill and H. M. Mathews. —p. 347.
Study of Milk Problems in Canada. M. M. Seymour.—p. 353.

Southern Medical Journal, Birmingham, Ala.

19: 583-656 (Aug.) 1926

*Pernicious Anemia in North American Negro. S. C. Jamison, New Orleans.—p. 583.
*Dwight-Frost Cardiorespiratory Test as Aid in Early Recognition of Myocardial Insufficiency. A. Eustis, New Orleans.—p. 585.
*Roentgenologic Treatment of Neurocirculatory Disorders. K. H. Beall and S. Jagoda, Fort Worth, Texas.—p. 590.
*Pathology of Some Unusual Pulmonary Lesions. H. R. Wahl, Kansas City, Mo.—p. 591.
Rupture of Aortic Aneurysm into Superior Vena Cava: Two Cases. H. Hartman and M. D. Levy, Galveston, Texas.—p. 595.
Primary Tumors of Mediastinum and Lungs. R. E. Myers, Oklahoma City.—p. 598.
*Paratyphoid Fever in One-Year Old Infant: Case. E. Lewis, Washington, D. C.—p. 602.
*Treatment of Leprosy. R. M. Wilson, Kwangju, Korea.—p. 603.
Comparison of White and Colored Death Rates in Little Rock and Arkansas. W. L. Holt, Little Rock, Ark.—p. 605.
School Examinations Analyzed. F. L. Roberts, Trenton, Tenn.—p. 611.
Indications for Surgery in Syphilis. L. Thompson, Hot Springs National Park, Ark.—p. 615.
*Treatment of Eclampsia. H. M. Rubel, Louisville, Ky.—p. 618.
Therapeutic Management of Painful Feet. E. D. McBride, Oklahoma City.—p. 625.
*Intrinsic Derangement of Knee Joint. M. S. Henderson, Rochester, Minn.—p. 633.
Treatment of Acute Suppurative Arthritis. P. A. Caldwell, Shreveport, La.—p. 637.
Intracranial Complications After Peritonsillitis. J. M. Woodson, Temple, Texas.—p. 644.
Preliminary Examinations Before Major Operations on Eye. R. H. T. Mann, Texarkana, Ark.-Texas.—p. 648.

Pernicious Anemia in Negro.—Jamison points out that pernicious anemia occurs fairly frequently in the North American negro, and that its characteristics do not materially differ from those seen in the white man. The diagnosis of pernicious anemia in the negro rests primarily on the examination of the blood. The physical examination does not even arouse the suspicion of the existence of this disease in patients of this color. The change in the color of the skin, the lemon-yellow tint, which is such an important diagnostic sign in the white, and which usually first calls the attention of the physician to the possibility of pernicious anemia, is absent in the negro, and no corresponding color change takes place. This is true both in the very black negro and in the chocolate colored. As a result, the diagnosis is likely to be overlooked, unless routine blood examinations are made on all negro patients. Glossitis, in Jamison's experience, is rather the exception than the rule in undoubted cases, both in whites and in negroes.

Dwight-Frost Cardiorespiratory Test.—The principle underlying the Dwight-Frost cardiorespiratory test is that strain applied to the heart muscle by marked variations in intrathoracic pressure will cause the tonicity of the heart muscle to vary as recorded by the systolic pressure. Eustis has found this test of value in 100 cases presenting symptoms of cardiac disease.

Roentgenotherapy of Neurocirculatory Disorders.—Beall and Jagoda record an apparent cure of a very severe case of thrombo-angiitis obliterans and an apparent relief from Raynaud's disease by roentgenotherapy.

Pathology of Pulmonary Disease.—Wahl gives a summary of the main pathologic observations in syphilis of the lung, spirochetal pulmonary gangrene, bronchomoniliasis and pulmonary blastomycosis.

Paratyphoid Fever in Infant.—There was evidence that the infection in Lewis' case of paratyphoid B was milk-borne. The first symptom of illness was noted seven days after the child was weaned and placed on a whole milk diet.

Treatment of Leprosy.—Wilson reports favorable results from the use of chaulmoogra oil and esters with 1 per cent camphor added.

Treatment of Eclampsia.—Rubel favors the conservative treatment of eclampsia consisting in the main of rest and the administration of sodium bicarbonate, glucose and magnesium sulphate solutions. Venesection to the extent of 500 to 1,000 cc,. followed by the introduction of a like amount of a 20 per cent glucose solution, should be resorted to if the blood pressure is above 150 mm. and convulsions continue. Cesarean section as a routine procedure is discouraged.

Intrinsic Derangement of Knee Joint.—Henderson asserts that intrinsic mechanical derangements of the knee are usually due to a fracture or tear in either the internal or external semilunar cartilages with repeated lockings, and generally cause sufficient disability to demand the removal of the torn cartilage. Osteocartilaginous loose bodies are formed by ostearthritis or exfoliation of a portion of the internal condyle of the femur, osteochondritis desiccans, or they may be formed by a neoplastic process involving the synovia, osteochondromatosis. The incisions performed for the removal of the semilunar cartilage are the internal or external anterior lateral. For the removal of the loose bodies, split or lateral patella or posterior lateral incisions are used.

Southwestern Medicine, Phoenix, Ariz.

10: 289-330 (July) 1926

Immunity. C. F. Beeson, Roswell, N. M.—p. 289.
Proceedings of Forty-Fourth Annual Session of New Mexico Medical Society, Albuquerque.—p. 291.
Extrapleural Thoracoplasty in Pulmonary Tuberculosis. W. H. Thearle, Denver.—p. 296.
Extrapleural Thoracoplasty. L. S. Peters, Albuquerque, N. M.—p. 304.
Granuloma Inguinale. H. M. Purcell, Phoenix.—p 309

United States Veterans' Bureau Medical Bulletin, Washington, D. C.

2: 745-823 (Aug.) 1926

Sources of Error in Neuropsychiatric Diagnosis. H. H. Hoppe, Cincinnati.—p. 745.
*Treatment of Nedrosyphilis with Tertian Malaria. D. E. Singleton and W. J. Riley, Maywood, Ill.—p. 757.
*Tuberculosis of Spine Treated by Plaster-of-Paris Jackets. P. P. Haslitt, Dallas, Texas.—p. 760.
Roentgen-Ray Findings and Combination Chest Conditions of Chronic Gassed Cases Versus Tuberculosis. C. E. Fitzsimmons, Kansas City, Mo.—p. 764.
*Calcium Treatment of Bronchial Asthma with Emphysema. T. J. Casey and S. Pinninger, San Francisco.—p. 768.
Social Service with Reference to U. S. Veterans' Bureau Patients. E. Davis, Algiers, La.—p. 770.
Cross-Index System of Pathologic Findings. M. P. McKnight, Washington, D. C.—p. 773.
*Bell's Palsy Cured by Extraction of Teeth. F. D. Knox and V. L. Minehart, Lake City, Fla.—p. 777.
Foreign Bodies in Stomach of Dementia Praecox Patient. J. G. Cullins and R. W. Brown, New York.—p. 779.
Case of Healed Milary Tuberculosis. H. E. Mason and F. B. Nather, Fort Harrison, Mont.—p. 783.

Malaria Treatment of Neurosyphilis.—The results obtained by Singleton and Riley with the malaria treatment of forty-six cases of neurosyphilis are such that they feel that continuance of the treatment is warranted.

Tuberculosis of Spine.—Forty-five cases of tuberculosis of the spine have been treated by Haslitt by plaster-of-paris jackets. All patients improved rapidly and progressed right along into inactivity with the exception of two. The average time for ankylosis and inactivity was about eighteen months. The majority of cases had a pulmonary lesion in connection with the spine. The chest condition improved after from six to nine months of the jacket treatment and, further, when inactivity was noted in the spine it was found likewise in the chest.

Calcium Treatment of Bronchial Asthma.—A case of bronchial asthma with emphysema and cardiac hypertrophy is reported by Casey and Pinninger. The patient was treated with calcium with marked relief and without reaction so long as the calcium injections were made slowly.

Tooth Extraction Cures Bell's Palsy.—Knox and Minehart's patient had a typical and well marked Bell's palsy on the right side. Examination disclosed rather marked pyorrhea alveolaris, and an impacted, lower left third molar. These three teeth were removed. Within two days after these extractions the facial paralysis disappeared to a very marked extent. The cure was not absolute, however, for the right side seemed weaker than the left and at intervals pain was experienced in the seventh nerve at or near its exit from the skull. One week later the right upper lateral incisor was removed because of extensive and deep infected pyorrhea pockets about it. Within four days complete function had returned and pain was no longer felt in the seventh nerve. The paralysis has not recurred.

West Virginia Medical Journal, Charleston

22: 393-448 (Aug.) 1926

Gastrotomy for Food Overdistention. A. P. Butt, Davis, and G. N. Cromwell, Elkins.—p. 393.
Differential Diagnosis of Angina Pectoris. O. B. Biern, Huntington.—p. 397.
Sigmoid Sinus Thrombosis. H. R. Johnson, Fairmont.—p. 402.
Early Diagnosis and Treatment of Acute Purulent Otitis Media. I. Fawcett, Wheeling.—p. 405.
Neuritis of Eighth Cranial Nerve. F. O. Marple, Huntington.—p. 407.
Newer Methods of Handling Infections of Upper Respiratory Tract. M. F. McCarthy, Cincinnati.—p. 410.
County Society Secretary. J. C. Irons, Dartmoor.—p. 414.

Wisconsin Medical Journal, Milwaukee

25: 371-416 (Aug.) 1926

Medical Reports in Compensation and Personal Injury Cases. R. M Carter, Green Bay.—p. 371.
*Gastro-Enterostomy for Gastric Ulcer from Roentgenologic Viewpoint. H. Curl, Sheboygan.—p. 377.
*Cholecystography: Oral Administration of Sodium Salt of Tetraiodophenolphthalein. F. W. Mackoy, Milwaukee.—p. 381.
*Myelography to Demonstrate Obstructions of Spinal Canal. H. H. Reese, Madison.—p. 384.
Family Physician's Duty. J. P. Koehler, Milwaukee.—p. 388.
Privately Owned Water Supplies in Racine. W. W. Bauer, Racine.—p. 389.
*Giant Appendix or Mucocele. N. C. Trauba, Madison.—p. 390.

Gastro-Enterostomy and Roentgenoscopy.—Curl urges that every case submitted to surgery for a possible gastro-enterostomy should first have a radiologic examination to determine the size, shape and position of the stomach, and that the stoma should be placed in the pyloric antrum and as near the pylorus as possible.

Cholecystography.—Mackoy regards the oral administration of the sodium salt of tetraiodophenolphthalein as being the safest and most practical method for routine use.

Myelography.—Reese has used this method of diagnostic assistance in eighteen cases. In every case he injected 2 cc. of an iodized oil into the intra-arachnoid space, high above the obstruction by puncture of the cisterna cerebellomedullaris. The iodized oil remains for a considerable time in the subarachnoid space or in the cauda equina. It is absorbed by the lymph vessels after it has been saponified by the alkaline spinal fluid into a whitish substance.

Giant Appendix.—The appendix in Trauba's case was 4¼ inches (10.7 cm.) long and 4⅓ inches (11.5 cm.) in circumference. It was dull white, and the surface was smooth.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Surgery, Bristol

14: 1-200 (July) 1926

Hutchinson's Triad. D'A. Power.—p. 1.
*Importance of Hematology in Surgery. A. Piney.—p. 9.
*Spontaneous Dislocation of Hip. R. W. Jones.—p. 36.
*Multiple Polypi of Colon. W. I. de C. Wheeler.—p. 58.
*Duodenal Ileus. J. E. Adams.—p. 67.
*Misplaced Endometrial Tissue Causes Stricture of Bowel. T. B. Mouat.—p. 76.
*Control of Hemorrhage After Prostatectomy by Use of Inflatable Rubber Bag. T. M. Millar.—p. 83.
*High or Third-Degree Prolapse of Rectum. K. W. Monsarrat.—p. 89.
Surgery of Lung. J. T. Morrison.—p. 94.
*Surgical Treatment of Cerebral Tumors. P. Sargent.—p. 102.
*Cancer of Rectum Treated by Perineal Excision. J. P. Lockhart-Mummery.—p. 110.
*Etiology of Congenital Inguinal Hernia and Abnormally Placed Testes. R. H. Hunter.—p. 125.
*Treatment of Cancer of Esophagus. A. L. Abel.—p. 131.
Anesthesia of Brachial Plexus. H. W. S. Wright.—p. 160.
Giant Meckel's Diverticulum (Thirty-Three and a Half Inches Long). H. H. Moll.—p. 176.
Acute Perforation of Duodenal Diverticulum. K. W. Monsarrat.—p. 179.
Diverticulum of Stomach. J. W. Thomson.—p. 180.
Apparent Case of Primary Epithelioma of Bone. G. P. Mills.—p. 181.
Postmortem Examination. H. Wilson.—p. 183.
Unusual Case of Torn Internal Meniscus of Knee.—p. 185.
Intestinal Obstruction in Infant Three Days Old, Due to Abnormal Rotation of Mid-Gut. F. Harvey.—p. 187.
Jejunogastric Intussusception. H. Darling.—p. 190.

Importance of Hematology in Surgery.—Piney emphasizes the fact that the degree of leukocytosis is not the feature on which most stress is to be laid, just as the size of a tumor can give little information as to its nature. The one method of real value must depend on detailed examination of the constituent cells.

Spontaneous Dislocation of Hip.—Among 5,908 patients forming the basis of Jones' study, twenty-seven were treated for spontaneous dislocation of the hip (i. e., all nontraumatic acquired dislocations), the incidence therefore being 1-219. In the same series there were only two cases of traumatic dislocation—an incidence of roughly 1-3,000. Though most cases can be improved, corrective treatment as a whole is unsatisfactory, because in many cases the dislocation is associated with other irreparable injury.

Multiple Polypi of Colon.—Wheeler reports two cases and reviews the literature. There is a close association between ulcerative colitis and polyposis. Ulcerative colitis occurs in children as well as in adults. The majority of cases sooner or later become malignant. A condition of infantilism may result from polyposis of the colon in early life. Polyposis of the colon cannot be diagnosed unless the polypi are seen or felt. Satisfactory roentgen-ray and proctoscopic examinations are only possible in a proportion of cases. When multiple polypi of a very diffuse nature are present in the colon, there is a characteristic infiltration and want of flexibility in the walls which is unlike any other pathologic condition. When handling the colon he finds the increase in weight very striking. The prognosis is bad unless colectomy is performed. Ileostomy, cecostomy or appendicostomy, followed by irrigation, has been successful in a few cases.

Duodenal Ileus.—Adams reports five cases of duodenal ileus. A consideration of these cases appears to indicate that chronic duodenal ileus may be secondary to gastroptosis alone. In a smaller number of cases, it may be due to compression of the fourth part of the duodenum by the superior mesenteric vessels and the drag of the mesentery. It is doubtful how far it is a manifestation of general visceroptosis, but this may be responsible for it. The dilatation of the duodenum, therefore, may affect primarily either the first or the third part of the duodenum. The appropriate treatment in most cases is duodenojejunostomy. In a few cases, however, there is so pronounced a kink at the junction of the first two parts of the duodenum that gastro-enterostomy is likely to give the best results.

Misplaced Endometrial Tissue Causes Stricture of Bowel.—The first case cited by Mouat was an implantation endometrioma involving the ileum. The second case was one of

perforation of a tubo-ovarian blood cyst which simulated rupture of an extra-uterine gestation. At operation a stricture of the ileopelvic colon was found, and when subsequently resected proved to be an implantation endometrioma.

Control of Hemorrhage After Prostatectomy.—Millar uses the Pilcher bag and attaches a 1 or 2 pound weight to the urethral tube by means of a piece of string which passes over the bar at the foot of the bed, or over a pulley. The patient is thus left with the bag fitting snugly into the prostate pouch.

Prolapse of Rectum.—Monsarrat asserts that high or third-degree prolapse of the rectum is a true invagination. The starting point of this invagination is always about the junction of the pelvic colon and the rectum.

Treatment of Brain Tumor.—Sargent reviews his treatment of cerebral gliomas; fifty-seven cerebellar tumors; forty-one endotheliomas; forty-seven cerebellopontile tumors, and sixty-eight cases of supposed pituitary tumor.

Cancer of Rectum: Results of Treatment.—Lockhart-Mummery reports 100 private cases of rectal cancer with three deaths, a mortality of 3 per cent, and 100 hospital cases with fourteen deaths, a mortality of 14 per cent. Among eighty-two patients operated on over five years ago, there were forty-five cures, or 54.8 per cent. Taking a three-year basis, there are 125 cases with seventy-three cures, or 55.5 per cent.

Etiology of Congenital Inguinal Hernia.—As the testis, processus vaginalis, gubernaculum and fascial coverings can be lifted out of the scrotum of a newly born infant without tearing anything but a little superficial connective tissue, Hunter says the gubernaculum is not attached to the skin of the scrotum, and the testis cannot be drawn from the abdominal cavity to the scrotum by its contraction. The gubernaculum at first acts as a kind of anchor to the testis; its largest strand normally passes to the scrotal region in the human fetus and forms the path for the large growing cells which cause the growth of the processus vaginalis. The processus vaginalis develops as a cone-shaped diverticulum of peritoneum and, just before the descent of the testis, its apex normally reaches to the point of junction between the anterior abdominal wall and the scrotum. During the descent of the testis the peritoneum, which is adherent to the proper fibrous tunic of the gland, is drawn down into the scrotum. If the processus vaginalis is longer than normal before the testis descends, the excess of peritoneum present will become folded on itself and form a hernial sac.

Treatment of Cancer of Esophagus.—Abel avers that cancer of the esophagus can and should be diagnosed at an early date after its commencement; that it is a relatively benign, mild type of malignant growth; that radium, roentgen rays and diathermy are of very little value in the treatment of the disease. He describes his method of operation and predicts 100 per cent cures if cases are diagnosed early.

British Medical Journal, London

2: 237-284 (Aug. 7) 1926

Termination of Pregnancy Before Viability of Child. T. W. Eden, A. L. McIlroy, J. D. Barris, F. W. Price, R. H. Cole and H. H. Evers.—p. 237.
*Gangrene of Fingers Due to Subclavian Compression. A. K. Henry and A. Handousa.—p. 254.
*Generalized Tuberculous Peritonitis. G. W. V. Parry.—p. 255.

Subclavian Compression Causes Gangrene of Fingers.—Descent of the shoulder during growth or through muscular weakness may occasionally cause compression of the lowest trunk of the brachial plexus by a normal first thoracic rib. The case cited by Henry and Handousa illustrates the fact that the subclavian artery may suffer similar compression at the thoracic inlet. A dry gangrene resulted, affecting the two distal phalanges of the index, middle and ring fingers of the left hand. There was a flaccid paralysis of the majority of the muscles of the left arm, forearm and hand, but there was some contracture of the digital extensors which caused the fingers to curve slightly in a dorsal direction. The deltoid was completely paralyzed, and the humeral head had sunk toward the subglenoid position—a subluxation that could at once be reduced.

Tuberculous Peritonitis Causes Intestinal Obstruction.—Parry's patient was a woman, aged 70. She complained of abdominal pain and vomiting. Tenderness was elicited over the lower abdomen with some rigidity and distention, but no obvious mass was felt. The general condition remained good until fecal vomiting occurred. The abdomen was opened and an obstruction of the small intestine was found about 18 inches from the cecum; this was caused by a band which stretched from a loop of intestine to a tuberculous gland in the mesentery; a piece of small intestine was also adherent to the mesentery and kinked. Further up a second complete obstruction was found, due to a smaller band stretching from omentum to mesentery, the intestine above being acutely distended. Enlarged glands were present throughout the mesentery, some calcareous and some soft, and small tuberculous nodules were scattered throughout the peritoneal cavity. There was a small quantity of fluid in the pelvis.

Journal of Neurology and Psychopathology, London

7: 1-96 (July) 1926

*Affective Symptomatology of Disseminated Sclerosis. S. S. Cottrell and S. A. K. Wilson.—p. 1.
Psychology of Character. I. W. Brown.—p. 31. (To be Cont.)
*Spontaneous Subarachnoid Hemorrhage. F. P. Weber and O. Bode.—p. 39.
Analytic Fragment. T. C. Good.—p. 47.

Pathogenesis of Disseminated Sclerosis.—One hundred consecutive cases of disseminated sclerosis of both sexes of great variability as regards duration, degree and clinical type were submitted to a complete neurologic and psychologic investigation by Cottrell and Wilson. The vast majority of these cases had shown the characteristic changes in (*a*) prevailing emotional disposition, (*b*) the emotional expression and control, and (*c*) sense of physical well being. Evidence is adduced which suggests that the affective symptoms are the outcome of invasion of the paleothalamus by the morbid process.

Spontaneous Subarachnoid Hemorrhage.—Weber and Bode report the case of a woman, aged 54, who was sent into the hospital as a case of suspected epidemic encephalitis. Examination of the cerebrospinal fluid, however, showed it to be one of subarachnoid hemorrhage. This diagnosis was further confirmed six days after the commencement of the illness by the patient suddenly becoming temporarily comatose, evidently owing to further hemorrhage. The usual moderate pyrexia, as noted in other cases, was present. The Wassermann reaction was negative in her blood serum and cerebrospinal fluid, and there was no evidence of any tuberculosis. Previously to the illness she had been apparently healthy, excepting that, since her sixteenth year, she had suffered from attacks of headache (chiefly leftsided) and vomiting, lasting two or three days, and recurring about every six weeks. She gradually recovered from the subarachnoid hemorrhage without there being any definite localizing symptoms, but very slight right lower facial paresis was observed after her recovery, and some impairment of her memory and energy. Since her illness (about three months) she has had none of her habitually recurrent migraine-like attacks.

Journal of State Medicine, London

34: 435-496 (Aug.) 1926

Ventilation and Heating of Factories; Influence on Health. H. M. Vernon and T. Bedford.—p. 435.
Periodic Health Surveys. R. A. Fisher.—p. 446.
*Climatic Bubo: Treatment by "Protein Shock" and Aspiration. G. C. Low and W. E. Cooke.—p. 450.
Random Recollections of Forty Years' Service. D. S. Davies.—p. 464.
Bearing of Agricultural Schemes in Nile Valley on Bilharziasis as Observed at Kom Ombo Company Estate. M. Khalil.—p. 472.
Prophylaxis of Plague in Egypt. K. Hanna.—p. 478.

Protein Shock Treatment of Climatic Bubo.—Low and Cooke treat all cases of climatic bubo by the protein shock method of Hanschell. Intravenous injection of T. A. B. vaccine (typhoid, paratyphoid A and B) is given in increasing doses at intervals of from four to eight days, preferably six days. Beginning with 50,000,000 or 100,000,000, the doses are increased by 50,000,000 or 100,000,000 until 250,000,000 or 300,000,000 are given at an injection. The length of interval between the doses and the increase in millions of the sub-

sequent doses are regulated by the condition of the patient, the amount of reaction after the dose, and the progress attained. The number of doses given are also dependent on the progress shown, while the amount of the initial dose depends on the condition of the patient when first seen. If pyrexia is already present, the first dose should be small. In cases in which pus is recognized to be present in the glands, where incision would formerly have been made, aspiration is now performed. Successive aspirations may be necessary to insure success.

Lancet, London

2: 265-314 (Aug. 7) 1926

Function and Design. J. B. Leathes.—p. 265.
*Sprue and Addisonian Anemia. H. B. Newham, R. M. Morris and P. H. Manson-Bahr.—p. 269.
Elongation of Pelvic Colon: Surgical Treatment. E. G. Slesinger.—p. 274
Climatic Bubo H. M. Hanschell.—p. 276.
Intelligence of Criminals. H. A. Grierson and C. H. L. Rixon.—p. 277.
*Multiple Skin Cancers of Occupational Origin. W. J. O'Donovan.—p. 278.
*Acute Dilatation of Stomach. N. W. Snell and L. H. Savin.—p. 279.

Sprue and Pernicious Anemia.—Sprue and addisonian anemia are considered by Newham et al. as being two distinct clinical entities, t..ough having several features in common. They are produced by two definite and distinct etiologic agents. Sprue is definitely a disease of the tropics, in some way connected with the exposure of susceptible persons to a condition, or conditions, inseparable from life in a tropical climate. Addisonian anemia, on the other hand, has a cosmopolitan distribution. The typical anemia that accompanies these two diseases is almost identical, but this feature alone does not indicate a similar, or even allied, etiology. Addisonian anemia is generally a fatal disease, though it may run a prolonged course; sprue is by no means so. The facts assembled in this paper suggest that: (*a*) The sprue anemia is secondary to the gastro-intestinal lesions. (*b*) In addisonian anemia, the anemia is due to disease of the blood-forming organs, so that recovery is not dependent on the processes of digestion and assimilation; the glossitis and gastro-intestinal symptoms appear to be secondary to, or to follow on, the primary anemia. (*c*) In sprue, assimilation of food is fundamentally affected, with the production of great emaciation and loss of body fat in which all organs, especially the liver, take part and which is dependent on, and associated with, the excretion of one fourth (it may be) of the food taken by the mouth; consequently, the excretion of large, fatty and colorless stools constitute a feature that is pathognomonic of sprue. (*d*) In addisonian anemia, assimilation of food is not affected to the same degree; emaciation is therefore not a feature; an increase of body fat may actually accrue; there is no wasting of the internal organs; the stools are of normal size and appear to contain the normal amount of pigment. (*e*) The toxin of addisonian anemia has a most definite selective action on the peripheral nerves and central nervous system, with the production of neuritis and of spinal sclerosis, features which, in the experience of the authors are not found associated with the anemia of sprue.

Multiple Skin Cancer.—O'Donovan reports a case of multiple cutaneous skin carcinomas. The scrotum, face, limbs and chest are sites of incidence. So far local excision has sufficed, but new growths are appearing. The patient had been employed in contact with liquid petrolatum as a gunsmith for thirty-nine years. The nature of the tumors has been demonstrated microscopically four times. Arguments are adduced to establish the occupational cause of this disease.

Acute Dilatation of Stomach.—In the case reported by Snell and Savin there was present aortic succussion that could be heard at a distance of 12 feet. The splashing sounds were synchronous with the heart beat. Examination of the abdomen revealed that the stomach was enormously distended, reaching below the umbilicus and far into both flanks. It appeared to contain gas and fluid; and deep palpation revealed that the succussion splashes were being caused by a forcibly pulsating aorta, every beat of which drove the stomach against the anterior abdominal wall. This impact was visible. Rolling the patient on his side or prone immediately stopped the splashes; but they recurred at once on putting him on his back.

Medical Journal of Australia, Sydney

2: 95-130 (July 24) 1926

Cancer Research. W. Moppett.—p. 95.
Nonspecific Immunity. D. M. Paton.—p. 103.
Nonspecific Use of Antidiphtheritic Serum. T. S. Campbell.—p. 107.
Tabes Dorsalis with Anterior Horn Degeneration. K. Hiller.—p. 111.
Probable Case of Rat Bite Fever. T. W. Sinclair.—p. 111.
*Granuloma Tropicum. L. P. Johnston.—p. 112.
Diabetes Mellitus Treated by Raw Pancreas. L. J. J. Nye.—p. 112.

Granuloma Tropicum.—Johnston relates a case of granuloma tropicum of eleven years' duration. The patient had undergone many forms of treatment, even skin grafting, without any benefit resulting. He gave no history of syphilis, but the Wassermann test was four plus. Six injections of arsenic and eight of mercury were given, together with large doses of potassium iodide, but no improvement resulted. Although no Leishman-Donovan bodies could be found, it was decided to give sodium antimony tartrate. A dose of 0.03 Gm. was given intravenously and within a week the lesion had healed.

Practitioner, London

117: 69-136 (Aug.) 1926

Treatment of Head Injuries. D. J. Armour.—p. 69.
Uremia. H. B. Shaw.—p. 80.
Rheumatism and Chronic Infective Toxic States in Children. C. P. Lapage.—p. 90.
Technic of Breast Feeding. A. Hodgson.—p. 98.
Artificial Pneumothorax: Forty-Six Cases. F. B. Hobbs and A. I. G. McLaughlin.—p. 111.
*Value of Loewi's Mydriatic Test in Diagnosis of Acute Pancreatitis. H. Bailey.—p. 122.
*Acetonuria in Acute Mental Disorder. C. E. Palmer.—p. 127.

Loewi's Mydriatic Test in Diagnosis of Pancreatitis.—Bailey reports five cases of abdominal disease in which Loewi's test was employed. In three the test was positive. These proved to be cases of acute pancreatitis. In one case it was negative. At operation the gallbladder was found packed with stones. In the fifth case Loewi's test gave a wide dilatation of the pupil, which contracted when a bright light was brought near. At operation a large retroperitoneal abscess was found surrounding the pancreas.

Acetonuria in Acute Mental Disorders.—Palmer's observations support the view that acetonuria, in acute mental disorders, is of secondary importance, and although it may point the way for investigation, it is not responsible for any mental symptom, with the possible exception of resistiveness.

Quarterly Journal of Medicine, London

19: 411-478 (July) 1926

*Effect on Renal Efficiency of Lowering Blood Pressure in Cases of High Blood Pressure. C. Reid.—p. 411.
*Serologic Diagnosis of Neurosyphilis. H. F. Watson.—p. 431.
Gastric Acidity and Secretion in Health. T. A. Butcher.—p. 455.

Estimating Urea Concentrating Power of Kidney.—Apart from the application of the urea concentration test, Reid has obtained useful evidence as to the urea-concentrating power of the kidney from the examination of individual specimens of urine over the twenty-four hours, since in some of such specimens there may be a percentage of urea as high as or even higher than is shown by MacLean's test.

Serologic Diagnosis of Neurosyphilis.—The Wassermann and Lange reactions of the cerebrospinal fluid were carried out by Watson in a series of 350 cases, of which 119 were syphilitic, while various globulin tests and cell enumerations were made on 329. The Wassermann reaction with the serum and cerebrospinal fluid was negative in the 230 cases in which syphilis could be excluded. In the clinically syphilitic cases the Wassermann reaction gave positive results with the cerebrospinal fluid in 95.65 per cent, and with the serum in 94.78 per cent, while positive results with the colloidal gold test were obtained in 85.84 per cent. As regards globulin tests, the Pandy, mercuric chloride and sulphosalicylic acid tests gave about 95 per cent positive results; the Noguchi, 86 per cent; and the Ross-Jones, Nonne-Apelt and Kaplan, 71 per cent. Pleocytosis was also investigated and the results are detailed.

Annales d'Anatomie Pathologique, etc., Paris

3: 305-416 (April) 1926

*The Nasal Process in Development of the Face. V. Veau.—p. 305.
Significance of Internal Coracoclavicular Ligament. H. Rouvière.—p. 349.
*Gaucher's Disease. C. Oberling.—p. 353.

Rôle of Medial Nasal Process in Development of Face.—Veau made a detailed study of the medial nasal process and of its part in deformity of the face. His conclusions are based on 500 cases of harelip, with anatomic examination in over sixty cases, and necropsy of three fetuses.

Gaucher's Disease.—Oberling's paper is devoted to clinical, anatomic and histologic research on splenomegaly of the Gaucher type. He discusses the pathogenesis and etiology of the disease, also its treatment. The literature bearing on Gaucher's disease is added, with brief histories of forty-two cases cited. Eight illustrations show the histologic changes.

Bulletin de l'Académie de Médecine, Paris

96: 35-62 (July 13) 1926

Oriental Sore Contracted at Marseilles. E. Jeanselme.—p. 56.
*Tetanus of Uterine Origin After Abortion. Auvray.—p. 58.

Tetanus Originating from the Uterus After Abortion.—In Auvray's case the first manifestations of tetanus appeared on the sixth day after a probably induced abortion. It was evident that the origin of the infection was in the uterus. The treatment consisted in curettage, chloral (8 Gm. a day), subcutaneous injections of tetanus antiserum (600 cc. in three days), and injections of phenolized glycerin according to Baccelli's method. The patient died after three days. Two guinea-pigs, inoculated with fragments of the uterine contents, died from tetanus in less than two days. Auvray agrees with Simon, Wohlgemuth and Schneider that tetanus antiserum should be used as a routine prophylactic measure in cases of criminal abortion. If tetanus manifests itself, serum and sedative treatment should be supplemented by immediate hysterectomy or, if the patient's condition absolutely forbids this, by curettage.

Bulletins de la Société Médicale des Hôpitaux, Paris

50: 1325-1364 (July 23) 1926

Semeiologic Significance of Glycorrhachia. E. Duhot.—p. 1325.
*Isolated Case of Craniofacial Dysostosis. J. Comby.—p. 1327.
Malta Fever Cured with an Endoprotein Extracted from Bacillus Abortus. Courtois-Suffit et al.—p. 1329.
Paralysis of Last Four Cranial Nerves. L. Ramond et al.—p. 1334.
Primary Tuberculous Rheumatism. L. Babonneix and J. Mornet.—p. 1342.
Active Immunization of Infants Against Diphtheria. L. Ribadeau-Dumas and Chabrun.—p. 1350.
*By-Effects of Nicolle's Vaccine. L. Tixier and P. R. Bize.—p. 1354.
Attenuation of Ultraviolet Rays by Heat. A. C. Guillaume.—p. 1358.
Genuine Epilepsy and Convulsions of Pleural Origin. L. Bernard et al.—p. 1362.

Case of Nonhereditary and Nonfamilial Craniofacial Dysostosis.—Comby was called to see a boy, aged 9½, affected with pulmonary tuberculosis, and found craniofacial dysostosis similar to the familial cases described by Crouzon and by Debré. The deformities had been present since birth. The case was unique in the boy's family and antecedents as far as known. There was also an anomaly of the elbows, in which the forearms and arms were turned outward, as in genu valgum. The boy did not suffer from headache, and did not complain of any discomfort. His sight was somewhat weak, the hearing was intact. He appeared mentally backward. The Wassermann test made on several members of the family was negative, and specific treatment was without results.

Anergy Following Treatment of Chancroid with Nicolle's Vaccine.—Tixier and Bize observed four cases in which Nicolle's vaccine seemed to have unleashed an attack of herpes, and another case in which its use was followed by a return of malaria. In one instance, psoriasiform syphilids appeared two months after the chancre instead of five or six months after, as is usual. There were numerous cases of postvaccinal weakness which possibly favored the lighting up of tuberculous processes. From this it appears that there may be contraindications to antichancroid vaccination in certain visceral lesions. The Nicolle vaccine is none the less held to be an effective remedy for the bubo, although it often fails to act on the chancroid itself.

Comptes Rendus de la Société de Biologie, Paris

94: 1313-1388 (June 4) 1926. Partial Index

Rous Sarcoma and Gye's Theory. P. C. Flu.—p. 1315.
Technic for Isolating Ducrey's Streptobacillus. P. Durand.—p. 1324.
Bacteriophagy and Autolysis. E. Wollman and Reynals.—p. 1330.
*Comparative Research on Meinicke's Reaction. S. Mutermilch.—p. 1331.
*Significance of Alkalosis in Epilepsy. H. Claude et al.—p. 1334.
*Oral Vaccination Against the Staphylococcus. A. Urbain.—p. 1336.
*Staphylococcus Filtrates in Blepharitis. P. E. Kissin.—p. 1338.
Microdosage of Potassium in Biologic Mediums. M. Delaville and P. Carlier.—p. 1364.
Increase in Weight and Functional Activity of Remaining Kidney After Nephrectomy. L. Ambard.—p. 1375.
Histologic Changes with Hyperfunction of the Kidney. Benoit.—p. 1378.

Cholesterol-Free Antigen for Meinicke's Turbidity Reaction.—Mutermilch's antigen for serodiagnosis of syphilis is entirely free from cholesterol. It contains one volume of a 1 per cent alcoholic extract of horse heart and one volume of a 10 per cent alcoholic solution of balsam of tolu. He compares the results obtained in 1,000 serums with his own and Meinicke's antigens, and with the fixation reaction. In 710 serums from nonsyphilitic patients or from those cured of syphilis, all three reactions were negative. Fifty of the serums were from tuberculous subjects. In 236 serums from syphilitics the three reactions were positive. In nineteen cases, the Wassermann test proved more sensitive than the turbidity reactions; in twenty-eight, it was less sensitive. In three cases of latent syphilis, the reaction was partially positive with his own antigen and negative with the original Meinicke antigen; the Wassermann reaction was positive.

Rôle of Alkalosis in Epileptic Seizures.—In Claude, Rafflin and Montassut's experiments an induced alkalosis did not provoke an epileptic seizure in dogs with epileptogenic lesions, unless a toxic factor was present in addition.

Vaccination by Digestive Tract Against Staphylococcus Infection.—Rabbits were given staphylococcus vaccine by the mouth; eight days later they were injected subcutaneously with a staphylococcus culture. A transient redness in the injected area was the only effect, while the controls developed typical, large, slow-healing sloughs. In another series of experiments, rabbits vaccinated by the mouth were injected intravenously with staphylococcus culture. These rabbits lived five or six days longer than the controls, but all died of septicemia. This shows that immunity from the oral vaccination is local; according to Besredka, it is due to a sort of synergy existing between the skin and the intestine.

Besredka's Filtrates in the Treatment of Staphylococcus Blepharitis.—Kissin uses an ointment consisting of from 15 to 300 Gm. of a filtrate of staphylococci isolated from the eyelid lesions, in a petrolatum and lanolin vehicle, 50 Gm. of each. He applied the ointment to 150 patients with staphylococcus infection of the eyelids, rebellious to the usual measures. The applications were made once or twice a day. In 45 per cent of the cases, the cure was complete and definite; in 47 per cent there was great improvement. The treatment failed in the remaining 8 per cent, in which the blepharitis was complicated by rebellious eczema. Three of nine persons with recurring sty were cured entirely in three weeks and have remained so during the six months to date.

Gynécologie et Obstétrique, Paris

13: 401-476 (June) 1926

Biologic Action of Corpus Luteum. P. Ancel and P. Bouin.—p. 401.
Acute Infections of Infants. N. M. Nicolajew.—p. 409.
*Hemolytic Fibromyoma. G. Carajannopoulos.—p. 422.
A Maternity for Tuberculous Women. A. Couvelaire.—p. 428.

Hemolytic Fibroma of the Uterus.—Carajannopoulos describes a case of uterine fibromyoma in a woman, aged 40, in which examination of the blood serum revealed the presence of hemolysins. The blood serum proved hemolytic for its own red corpuscles, also for those from other subjects. The tumor was removed and it appeared to be a benign fibromyoma.

The hemolysin content of the blood was reduced by the third day after the operation, and it had disappeared completely by the ninth day. The patient was examined a year later; the general condition was very good. There were no signs of anemia or trace of metastasis. The formation of hemolytic lipoids in a tumor of this kind seems to be an unusual occurrence. It is possible that physical and chemical changes occurring in the tumor cells may have caused the hemolysis and a condition of precancerous anemia.

Paris Médical

61: 89-104 (July 31) 1926

The Emphysema Disease. G. Rosenthal.—p. 89.
Eosinoplasia and Basoplasia of Pleural Origin. M. Petzetakis.—p. 92.
Manganese Citrate in Therapeutics. L. Normet.—p. 102.

61: 105-128 (Aug. 7) 1926

Urology in 1926. R. Dossot.—p. 105.
Treatment of Pyelonephritis. G. Wolfromm.—p. 110.
*Compensatory Hypertrophy of Kidney. H. Bayle.—p. 121.
*Methylene Blue in Renovesical Tuberculosis. H. Blanc.—p. 124.

Compensatory Hypertrophy of the Kidney.—In Bayle's fourteen experiments on rabbits, and in fourteen similar experiments by Maugeais and Ferron, after removal of one kidney, the other kidney enlarged in all the animals except two. There was evidence that the hypertrophy developed within the first forty-five days following the operation and did not progress after that. The total weight of the remaining kidney was increased by about two-thirds. The renal cortex, tubules and glomeruli proved to be the only parts of the kidney involved in the hypertrophy, and Bayle found that in the normal kidney the weight of these structures is two-thirds that of the entire organ. Thus, for the secreting tissue lost by removal of one kidney, the organism was compensated by hypertrophy in the other. No new tubules or glomeruli formed; the increase in size took place by cellular hypertrophy and hyperplasia.

Therapeutic and Diagnostic Value of Methylene Blue in Tuberculosis of Urinary Apparatus.—This dye, being chiefly eliminated by the kidney, impregnates the urinary organs, where it exerts an antiseptic and sedative influence on inflamed tissues. It is of benefit in all cases of tuberculosis of the urinary tract. Blanc prescribes pills containing 0.05 Gm. of methylene blue each, twice a day, with meals. The treatment may be continued for a long time, with a ten day rest every month, and greatly ameliorates the cystitis. A 1 per cent solution of methylene blue in a 7 per cent saline solution is used for local treatment. Usually 5 cc. of the solution is injected into the bladder every other day. Sometimes 2 cc. is first injected, then the dose gradually increased to 10 cc. Methylene blue treatment is not intended to replace surgery of the kidney. Failure of methylene blue to benefit a cystitis would be of diagnostic value in helping to exclude from the diagnosis cystitis of nontuberculous origin.

Presse Médicale, Paris

34: 961-976 (July 31) 1926

Diseases of the Scalp. R. Sabouraud.—p. 961.
*Early Signs of Cancer of the Esophagus. J. Guisez.—p. 964.
Asthma, Climate and Housing. P. Pagniez.—p. 966.

Early Signs of Cancer of the Esophagus.—Guisez emphasizes that difficulty in swallowing solid food is a characteristic and early sign of the affection. No discomfort is noted on ingestion of fluids or soft substances, contrary to what occurs in ordinary spasm of the esophagus. The difficulty in swallowing may be intermittent at the onset of the malignant disease, merely the sensation of the brief arrest of a mouthful of bread or meat. A whitish or blackish symmetrical coating of the tongue, at the base, each side of the median line, is a constant sign of cancer of the upper esophagus. Streaks of blood in the sputum suggest a malignant growth. A single hematemesis in a person with spasm of the esophagus is also characteristic. Hoarseness may be manifest in the beginning. Esophagoscopy combined with biopsy will solve all doubts. Radium may prove effectual in treatment. In several of his cases the patients applied for relief from a supposed swallowed foreign body.

34: 977-992 (Aug. 4) 1926

Inward Coxa Vara Plus Outward Coxa Valga. A. Mouchet and C. Roederer.—p. 977.
Case of Leprosy with Syphilis. G. Delamare and Achitouv.—p. 979.
*Modified Meltzer-Lyon Test. I. Hatzieganu and M. Halitza.—p. 981.
Pituitary Treatment in Gallbladder Disease. G. Ichok.—p. 983.

Modification of the Meltzer-Lyon Test.—Hatzieganu and Halitza inject 0.16 Gm. of indigocarmin dissolved in 10 cc. of water, into the buttock. The injection is given in the evening, four hours after ingestion of 200 cc. of milk or tea. The next morning, 40 cc. of 33 per cent magnesium sulphate is given with the duodenal tube. The bile obtained within the first ten minutes after this is a golden yellow, then it suddenly becomes a greenish blue, the characteristic tint of green gallbladder bile mixed with indigocarmin. From ten to twenty minutes later, the bile is again yellow. This sequence was observed in all the ten subjects with normal livers. The test was applied in three patients after removal of the gallbladder for cholecystitis, but with intact liver. The bile appeared yellow after administration of the magnesium sulphate, the same as before. There were no traces of indigocarmin. Evidently the dye is partly retained in the gallbladder after having been eliminated by the liver. The indigocarmin used with the Meltzer-Lyon test may facilitate the differentiation between the bile from the common bile duct, gallbladder or liver. The test requires good elimination on the part of the liver.

34: 993-1008 (Aug. 7) 1926

*Renal Diabetes. M. R. Castex.—p. 993.
Conjugate Ulcers of Pylorus and Lesser Curvature. X. Delore et al.—p. 996.
Tension-Reducing Drugs in Arterial Hypertension. C. Mattei and J. Dias-Cavaroni.—p. 999.

Etiology and Pathogenesis of Renal Diabetes.—Castex' lecture, delivered at the Charité Hospital in Paris, was based on six personal observations of renal diabetes. Intestinal toxemia seemed to be the etiologic factor in all. In 83 per cent protozoa were present in the intestines. The acidosis entailed by the toxemia plays a predominant rôle in the pathogenesis. Acquired syphilis was frequent, but specific treatment did not influence the renal diabetes. The prognosis is good. Biologic and drug treatment of the intestinal intoxication, with appropriate diet, proved entirely successful.

Schweizerische medizinische Wochenschrift, Basel

56: 681-704 (July 17) 1926

*Nose and Eye. A. Siegrist.—p. 681.
*Etiology of Erythema Nodosum. E. Feer.—p. 682.
Mastitis from Diphtheroids. P. Clairmont.—p. 685.
*Medicine and Law. H. Zangger.—p. 687.
*Ethyl Gas. F. Schwarz.—p. 689.
*Peripheral Regulation of Heart. W. R. Hess.—p. 690.
*Metabolism in Marching. A. Fleisch.—p. 692.
Sound for Prostatectomy. E. Dind.—p. 695.

Nose and Eye.—Siegrist's case demonstrates the importance of radical measures if there is a probability of disease of the nasal sinuses in optic neuritis, retinitis or cyclitis.

Etiology of Erythema Nodosum.—Feer concludes that erythema nodosum is a specific infectious and sometimes contagious disease, not identical with rheumatism. It occurs exclusively in tuberculous subjects. Its nodes are of tuberculotoxic nature.

Medicine and Law.—Zangger deals with volatile poisons, especially carbon monoxide (garage poison) and alcohol. Absence of the former in the blood does not prove anything, if the poisoned subject had been breathing artificially, if the necropsy was made after several days, if the blood had been transported in contact with air, or if the sensitiveness of the apparatus had not been determined. Many avoidable errors are made in forensic cases. The determination of alcohol has many sources of error and a wrong positive result may damage greatly the family of the deceased. Two methods different in principle should always be used. He believes that the use of tetra-ethyl lead in gasoline is dangerous and approves of its prohibition in Switzerland. He finds that the American experiments on its dangers were discontinued before the latter could be demonstrated. Innocuous sub-

stitutes, such as alcohol, may afford its technical advantages without entailing its dangers.

Ethyl Gas.—Schwarz points out that tetra-ethyl lead which is being added in a proportion of 1:1,000 to gasoline, is two hundred times more deadly than strychnine. Concentrated hydrocyanic acid is its only rival. Besides this, there is a danger of universal lead poisoning. He figures that every yard length of a street on which 2,000 automobiles are passing every hour, would be covered in a year by 36 Gm. of lead in the form of dust.

Peripheral Regulation of Heart.—Hess perfused an extremity of anesthetized frogs with intact nervous connections. When he increased the hydrogen ion concentration of the perfusing fluid, the heart beat was stronger and the conduction time was shortened.

Metabolism in Marching.—Fleisch found that the increased oxygen consumption in walking 17.7 meters is equivalent to 1 meter of mounting. With an incline of 23 per cent and above and with a speed of marching of at least 30 meters per minute (optimum conditions) the extra requirement per kilogrammeter of mounting is 2.06 cc. of oxygen (10 gram-calories). A subject weighing 75 Kg. and overcoming a difference in levels of 2,000 meters consumes under optimum conditions 1,500 kilogram-calories more than in resting.

Clinica Pediatrica, Modena

8: 321-384 (June) 1926

The Cerebrospinal Fluid in Tuberculous Meningitis in Children. G. Taccone.—p. 321.
*Skin Tests for Susceptibility to Scarlet Fever. A. Baccichetti.—p. 361.
*Diagnosis by Vaccine Test. G. Castorina.—p. 372.

Skin Test for Susceptibility to Scarlet Fever.—Baccichetti concludes from his tests of seventy children of all ages that neither the Dick reaction nor the Di Cristina and Caronia reaction is a dependable index of the susceptibility to scarlet fever.

Vaccine Diagnosis.—Castorina injected intradermally 0.5 or 1 cc. of the specific vaccine in various acute infectious diseases in seventy-one children and adults. The reactions were instructive in whooping cough, pneumonia and pleurisy, in the typhoid group, in meningitis and sepsis (skin), but the response was negative in measles, with various vaccines.

Morgagni, Naples

68: 961-992 (Aug. 1) 1926

*The Individual Human Biotype. A. Marotta.—p. 961.
Present Status of Syphilis in Internal Medicine and Treatment of Its Manifestations. F. Massara.—p. 966.

Constitutional Types from Standpoint of Preventive and Industrial Medicine.—Marotta remarks that the old conception of constitution, temperament and character, in its new form, is like a three-sided pyramid. The base is the inherited patrimony, and the three sides are the physical, the psychologic and the neurochemical constitutional elements, the whole forming the individual biotype. This analysis of constitutional types confirms the fundamental importance of interpretation and classification according to the rhythm and balance of constructive and destructive metabolism, the cycloid and the schizoid. This allows training of children to overcome constitutional handicaps, and it affords a basis for sexual enlightenment and vocational guidance, and for selection of officials, etc. Pende has appealed for organization in medical centers of what he calls biotypologic and orthogenetic dispensaries. He has one already in operation at Genoa, and Marotta has undertaken the same task at Naples, undeterred, he says, by the vastness of the field to be worked.

Pediatria, Naples

34: 753-808 (July 15) 1926

Suprarenals in Toxicosis of Infants. S. Maggiore.—p. 753.
Myxedema and Rickets. O. Cozzolino.—p. 761.
Meinicke Tests. G. Armuzzi.—p. 770.
Meningitis from Contagious Parotitis. F. Morabito.—p. 783.

Policlinico, Rome

33: 1005-1038 (July 19) 1926

*Globulins and Wassermann Reaction. E. Trenti.—p. 1005.
Eosinophilia in Lymphogranulomatosis. M. Bonanno.—p. 1008.
Tuberculosis of Joints. E. Capecchi.—p. 1014.
Phototherapy and Chemiotherapy in Syphilis. S. Licciardi.—p. 1017.

Globulins and Wassermann Reaction.—Trenti confirmed by ultrafiltration of cerebrospinal fluids the constant association with globulins of the specific antibody giving the Wassermann reaction. Only globulins from syphilitic subjects gave the reaction. Tryptic digestion destroys this property.

33: 333-380 (July 15) 1926. Surgical Section

*Phenolsulphonphthalein Test. A. Bonadies.—p. 333.
Malignant Change of Mole. E. Forti.—p. 357.
Intramuscular Lipoma. L. M. Moriconi.—p. 366.
*Blood Cholesterol After Splenectomy. P. Seu.—p. 372.

Phenolsulphonphthalein Test.—Bonadies had many unreliable results in the phenolsulphonphthalein test of renal function, especially in surgical cases. In spite of this he finds that a good elimination of the dye has clinical value.

Blood Cholesterol After Splenectomy.—Seu found low cholesterolemia in malaria patients with splenomegaly. The blood cholesterol rose to normal figures in about four months after splenectomy.

Rivista di Clinica Pediatrica, Florence

24: 433-504 (July) 1926

Stenosis of Esophagus. M. Raspi.—p. 433.
Oculocardiac Reflex. E. Bonalberti.—p. 447.
*Bovine Tuberculosis in Milk. S. Tronconi.—p. 453.
Tuberculous Meningitis. V. Zamorani.—p. 456.

Bovine Tuberculosis in Milk.—Tronconi found quite a number of artificially fed children from healthy parents with positive skin reaction to bovine tuberculin. Some of them had tuberculosis of bones, lymph nodes or skin. Many cattle in his region are tuberculous, and the milk is only rarely boiled.

Terapia Contemporanea, Naples

1: 385-432 (June 15) 1926. Dedicated to Koranyi

*Feeding by the Rectum. I. Boas.—p. 387.
Oxaluria. E. Freund.—p. 395.
Intestinal Atony. J. Pal.—p. 398.
Technic for Incising and Suturing. H. Lorenz.—p. 400.
Functional Neuroses in Relation to Endocrine Derangement. E. Kylin.—p. 405.
Rectoscopic Treatment of Chronic Proctitis. W. Zweig.—p. 410.
*Treatment of Edema. E. Baráth.—p. 411.
Diet with Insulin Treatment of Diabetes. O. Porges.—p. 414.
Insidious Forms of Genito-Urinary Tuberculosis. V. di Fabio.—p. 418.
Indications for Use of Amidopyrine. R. H. Wasicky.—p. 424.
Benzol Preparations in Treatment of Rickets. F. Winkler.—p. 425.
The Activity of League of Nations in the Field of Hygiene. C. Pirquet.—p. 428.

Feeding by the Rectum.—Boas no longer advocates feeding by the rectum in cases of acute hemorrhagic gastric ulcers. The resulting movements of the bowel interfere with the action of the measures applied to arrest the hemorrhagic tendency. This objection does not apply to systematic drip proctoclysis. Even with cancer of the stomach, it is usually possible to give some nourishment by the mouth. Rectal feeding is useful almost exclusively by its effect on the mind. Once a day is enough. With rebellious impermeable spasm, he advises prompt operation; with inoperable gastric cancer, jejunostomy is preferable to reliance on feeding by the rectum. Nothing is left, he says, of the edifice of rectal feeding erected in the last century except supplying water and—more as an ornamental addition than for their potential energy—carbohydrates and dilute alcohol.

Calcium and Potassium Treatment of Edema.—Baráth describes the basis for the treatment of edema with salts of calcium and potassium. The elimination of sodium is prompted by administration of calcium and potassium salts, while every accumulation of water is accompanied by retention of sodium. There seems to be further a direct action on the kidneys by the calcium and potassium. Calcium chloride or lactate (3 to 5 Gm.) also enhances the action of digitalis in edema from heart disease. The benefit from the salts of calcium and

potassium in kidney disease may include the whole clinical picture, but this treatment is not always effectual. The Volhard diuresis test elicits different responses when a 2 per cent solution of a salt is used instead of water. He reiterates that, except in grave heart disease, the treatment of all forms of edema with salts seems very promising. The interchange of ions in the tissues has an unmistakable influence on the movement of water and the diuresis.

Medicina Contemporanea, Lisbon

44: 193-200 (June 20) 1926

*Vaccine Therapy in Suppurating Otitis Media. A. Alvez.—p. 193.
Arguments for and Against a Professional Disciplinary Tribunal. A. de Azevedo.—p. 197.

Vaccine Therapy in Otitis Media.—Alvez gives the details of five cases to illustrate the great advantages of supplementing the ordinary treatment for otitis media with a vaccine in children and adults. If an autogenous vaccine is impracticable, the stock vaccine should be sensitized. After a mastoid operation, an old filtered broth culture should be applied locally, refraining from antiseptics.

Prensa Médica Argentina, Buenos Aires

13: 125-160 (July 10) 1926

*Malaria and Aortitis. M. R. Castex and J. J. Beretervide.—p. 125.
*Osgood-Schlatter's Disease. N. Tagliavacche.—p. 133.
*Leishmaniasis in Dogs. S. Mazza.—p. 139.
*The Calcium Content of the Blood. C. P. Waldorp.—p. 140. C'cn.

Relations Between Malaria and Aortitis.—Castex and Beretervide relate that eight of twelve patients with chronic malaria had aortitis. In three there was arteriosclerosis, and one presented attacks of angina pectoris. There was a history of syphilis, acquired in seven and congenital in three, and syphilis was probable in one of the others. Abuse of alcohol and tobacco and intestinal toxemia were common among them. The assumption of a malarial origin for the aortitis has little to sustain it. Aortitis is not especially prevalent in malaria zones, and, when it occurs, it is merely a casual coincidence.

Disease of the Tubercle of the Tibia.—In one girl, aged 13, there had evidently been a defect in the tubercle although there had been no symptoms of bone disease until after a fall. This was a typical instance of the Osgood-Schlatter disease. In a second case, in a man, aged 34, there was also a history of a trauma, but this patient was syphilitic. There is liable to be serious functional defect unless small partial fractures are recognized and treated properly (extension, compressing bandage and massage).

Canine Leishmaniasis.—Mazza found the leishman bodies in a typical lesion on the ear of a dog in Argentina. Similar reports have come from Persia, Algeria and Brazil.

The Blood Calcium and the Endocrine Glands.—Waldorp's extensive study of the calcium content of the blood confirms the influence of the nervous system on the fluctuations. The subject should be kept quiet before testing the blood calcium with intravenous injection of a given quantity of calcium. The resulting hypercalcemia lasts in normal conditions for an hour and then the calcium returns to the former level. In twenty-six cases of thyroid disease with high basal metabolism, the blood calcium content was low; in nine of eighteen cases the sugar content was abnormally high. The calcium content kept persistently low in a case of hypothyroidism and in three cases of exophthalmic goiter under thyroid treatment. The calcium content was below normal also in four cases of acromegaly and in one of a pituitary tumor. The calcemia in the latter case fluctuated with the increased or decreased functioning of the anterior lobe of the pituitary. In three cases of eunuchoidism, the basal metabolism was high in one, with low calcemia, but in the two others both were within normal range. His research on the parathyroids confirms their fundamental rôle in the maintenance of normal calcemia.

Revista Médica Latino-Americana, Buenos Aires

11: 1507-1672 (June) 1926

*Roentgen-Ray Diagnosis of Pregnancy. S. E. Bermann.—p. 1507.
Basal Metabolism in Diagnosis of Exophthalmic Goiter. Bosco.—p. 1554.
*Progressive Torsion Spasm in Children. A. S. Marotta.—p. 1561.
*Sanocrysin in Tuberculosis of the Eyes. A. Noceti.—p. 1586.
Formation and Origin of Bile Salts and Pigments. Deluca.—p. 1590.
*Tonsillectomy and the Blood. A. M. Suárez.—p. 1606.
*Treatment of Buccal Papillomas. Fernández and Bigatti.—p. 1610.
Camphor Derivatives in Treatment of Night Sweats. S. Jouan.—p. 1617.

Roentgen-Ray Diagnosis of Pregnancy.—Bermann reproduces ten roentgenograms showing clearly the fetus in the uterus, even as early as three months and twenty-nine days. After the third month, in fully 50 per cent of the women examined, the roentgen-ray picture was decisive. He reproduces also roentgenograms taken week by week which confirm that the roentgenologic diagnosis reveals only the ossification centers at first. The horizontal dorsolumbar position, the legs flexed, yielded better pictures than the knee-chest position (90-120 kilovolt and 100 milliampere current; exposure, a twenty-fifth of a second). He sometimes found the roentgenogram the only evidence of an existing pregnancy. It reveals a multiple pregnancy, and allows estimation of the measurements of the pelvis and of the presentation and phases of delivery. A negative response has no significance before the fifth month, but is instructive later than this.

Progressive Torsion Spasm.—Contracture and intense pain with defective nutrition masked the classical picture of torsion spasm in a girl who died at the age of 11. The first symptoms had appeared at the age of 4: an anomaly in the gait, soon accompanied by severe cramps, choreiform movements and difficulty in swallowing and speaking. Certain sets of muscles became rigid, but the cramps skipped about and yielded to gentle rubbing. There were no signs of pyramidal disease throughout.

Sanocrysin in Disease of the Eye.—Noceti reports aggravation from the sanocrysin in tuberculous keratitis and iritis, but some benefit seemed apparent in tuberculous scleritis and choroiditis.

The Blood in Connection with Tonsillectomy.—Suárez advocates testing the coagulation and bleeding time of the blood as a routine procedure before tonsillectomy. If the blood clots slowly, the operation should be deferred until after calcium chloride (3 to 5 Gm. daily) has restored conditions to approximately normal. If the coagulation time is as long as thirty minutes, it is wiser to refrain from the operation.

Magnesium Chloride in Treatment of Papillomas in the Mouth.—Fernández and Bigatti report the complete subsidence of a number of minute papillomas on the mucosa of the mouth of a man, aged 34, under fourteen intravenous injections of a 40 per cent solution of magnesium chloride, to a total of 5.95 Gm., in the course of a month. The amount injected was progressively increased from 0.05 to 1 Gm. and was then suspended on account of intolerance. They urge a trial of this treatment before any operation or cauterization of rebellious papillomas and warts. Greco has been advocating it for nearly ten years.

Semana Médica, Buenos Aires

1: 1373-1420 (June 24) 1926

Sclerosis of the Pulmonary Artery; Its Ectasia. J. R. Goyena and M. Miranda Gallino.—p. 1373.
Sympathetic Ophthalmia. O. Wernicke.—p. 1383.
*Adhesions Back of the Liver. H. J. D'Amato.—p. 1385.
Tuberculosis and Primary Dementia. A. Ameghino.—p. 1390.
*Trigeminal Neuralgia. G. A. Chiappori.—p. 1397.
Merbaphen as Diuretic in Heart Disease. O. de Rosa.—p. 1402.
Uterine Fibromyomas During Pregnancy. J. Bazán.—p. 1403.
Dietetic Treatment of Pulmonary Tuberculosis. O. Curti.—p. 1412.
Significance of Psychanalysis. E. Mouchet.—p. 1415.
*Transuterine Injection of the Fetus. R. Schwarcz.—p. 1417.

Sign of Adhesions Back of the Liver.—D'Amato states that he has confirmed in thirteen cases the reliability of the sign of adhesions in the "infrahepatic crossroads" to which Novaro and Zolezzi called attention in 1924. With the patient reclining horizontally on his back, the duodenum-gallbladder region is palpated, working toward the spine. When a tender point is found, the fingers are kept on this point while the patient is turned on his left side, the legs flexed. Then even gentle pressure at the tender point elicits intense pain. There is no pain, even under strong pressure, when this procedure is

applied with the patient reclining on his right side. When the bands connect the gallbladder with the colon or omentum, the pain on palpation is comparatively mild. The severest pains are those with adhesions connecting it with duodenum or duodenum and stomach.

Trigeminal Neuralgia of Dental Origin.—Chiappori analyzes the features which distinguish trigeminal neuralgia resulting from some unsuspected dental anomaly. In three cases described, removal of an unerupted wisdom tooth, or correction of pressure from false teeth, or removal of a fragment of a root broken off five years before, cured the neuralgia at one stroke.

Direct Transuterine Stimulation of the Fetus in Impending Asphyxia.—Schwarcz reports that in two cases he applied the heart tonic directly to the fetus when the heart sounds seemed to be weakening, instead of giving the stimulant by the usual roundabout way of the mother's circulation and the placenta. The parturient was given a few whiffs of chloroform, and an assistant held the body of the fetus still during an interval between the labor contractions. Schwarcz grasped the breech of the fetus with his left hand through the mother's abdominal wall and with the right introduced the needle in the center of this part, entering from above downward. He used an ordinary needle, 6 or 7 cm. long, and injected a minute dose of a camphor derivative. In this preliminary communication he gives no further details.

Siglo Médico, Madrid

78: 73-92 (July 24) 1926

*Radiotherapy of Melanosarcoma. J. and S. Ratera.—p. 73.
Peptic Ulcer and Treatment by Gastro-Enterostomy. Gañan.—p. 78. C'td.

Cure of a Melanosarcoma with Radium.—The Rateras report an apparent permanent cure of a recurring melanosarcoma on the foot of a woman, aged 70. The first signs of the lesion had been noted twenty years before. It subsided under roentgen-ray treatment, but returned suddenly the third year, rebellious to roentgenotherapy. Under radium therapy the cure now seems complete.

Archiv für Kinderheilkunde, Stuttgart

78: 241-319 (July 17) 1926

Treatment of Cholera Infantum. A. Bratusch-Marrain.—p. 241.
Pathogenesis of Cholera Infantum. A. Bratusch-Marrain.—p. 246.
Hereditary Defect of Clavicles. F. Vogel.—p. 259.
"Problem" of Hystero-Epilepsy. J. S. Galant.—p. 266.
*Salicylic Acid Poisoning. H. Meyer.—p. 269.
Milk with Citric Acid. H. Weissenberg.—p. 276.
Metabolism in Hyperthyroid Child. W. Hilsinger.—p. 302
Duodenal Ulcer in Infant E. Neter.—p. 305.

Salicylic Acid Poisoning.—Meyer reports two cases of poisoning by external application of an ointment containing salicylic acid. One of the patients was 9 months old, the other 8 years. The first sign of the poisoning was a dyspepsia. Fever followed, and a scarlatiniform rash appeared later.

Biochemische Zeitschrift, Berlin

174: 257-502 (Aug. 4) 1926. Partial Index

Action of Insulin and Pituitary Extract on the Blood. A. Gigon.—p. 257.
Influence of Insulin on Gastric Secretion. N. Wwedensky.—p. 276.
Absorption of Calcium Given by the Mouth. Lasch and Neumayer.—p. 333.
Iodine Metabolism. T. v. Fellenberg.—p. 341.
*Iodized Table Salt. T. v. Fellenberg.—p. 364.
Influence of Thyroid and Pituitary Extracts, Castration and Pregnancy on the Carbon-Nitrogen Ratio in the Urine. H. Wada.—p. 392 and p. 400.
Human Fat. O. Wagner.—p. 412.

Iodized Table Salt.—Fellenberg reports that the consumption of iodized common salt in Switzerland reached 10,600,000 Kg. in 1925. Assuming a consumption of 5 Kg. of salt per person per year, he concludes that 2,000,000 of the population cover the biologic deficiency of iodine in the food with iodized common salt.

Deutsche medizinische Wochenschrift, Berlin

52: 1199-1238 (July 16) 1926

Pathology of Sepsis. Kaiserling.—p. 1199.
Etiology of Sepsis. H. Selter.—p. 1201.
Purulent General Infection. Kirschner.—p. 1203.
Obstetric Sepsis. W. Benthin.—p. 1206.
Sepsis and the Eye. Birch-Hirschfeld.—p. 1209.
Sepsis in Otorhinolaryngology. Stenger.—p. 1210.
Sepsis in Urology. T. Cohn.—p. 1213.
Sepsis and Skin and Venereal Diseases. W. Scholtz.—p. 1215.
Sepsis in Children. Stoeltzner.—p. 1216.
*Discussion of These Papers on Sepsis. Adloff et al.—p. 1217.
*Prevention of Measles. E. Seligmann et al.—p. 1220.
*Blood Sugar After Oxygen and Radon. H. Jacoby.—p. 1222.
Hereditary Blood Diseases. E. Stettner.—p. 1223.

Symposium on Sepsis.—The series of papers printed in this issue originated in a symposium on sepsis held by the local medical society at Königsberg.

Prevention of Measles.—Seligman, Dingmann and Alterthum made epidemiologic studies in the Berlin Municipal Asylum for the Homeless—an institution taking care of up to 5,000 persons daily, including sometimes more than 200 children. They had good results in prevention of measles with convalescent's serum and also with adult's serum. It is difficult to adhere to Degkwitz' advice to use his serum on a certain day of the incubation. It does not make much difference, however, whether his indications are obeyed or not: his serum does not protect at all.

Blood Sugar After Oxygen and Radon.—Jacoby observed a lowering of the blood sugar after hyperpnea alone as well as after inhalation of oxygen or radon. It seems that the reported results of inhalation of insulin might have been due to the procedure rather than to the insulin.

Klinische Wochenschrift, Berlin

5: 1305-1352 (July 16) 1926

Reichsgesundheitsamt. F. A. Weber.—p. 1305. See Berlin Letter, Aug. 7, 1926, p. 427.
*Habitual Oliguria. J. Bauer.—p. 1308.
*Healed Generalized Tuberculosis. R. Klingenstein.—p. 1310.
*Work in Heart Disease. H. Eppinger et al.—p. 1316.
*Elasticity of Connective Tissue. C. Häbler and J. Pott.—p. 1317.
Malaria Treatment. H. A. Bunker, Jr.—p. 1319.
Cholecystography. K. Eimer.—p. 1320.
Heat Economy and Endocrines. F. Boenheim.—p. 1322.
"Organic Iron." R. Berger.—p. 1326. Reply. W. Heubner.—p. 1326.
"Vagina-Ovary Test." S. Loewe.—p. 1327. Reply. B. Zondek and S. Aschheim.—p. 1328.
*Alkali Balance and Tetany. F. Mainzer.—p. 1329.
*Blood Sugar Determination. B. Mendel and M. Bauch.—p. 1329.
Hydrogen Electrode. W. Schmitt.—p. 1330.
Passive Anaphylaxis. K. Hajós.—p. 1330.
Pernicious Anemia. I. Zadek.—p. 1331.
Living Standards. v. Tyszka.—p. 1334. C'cn.
Pneumothorax Needle. O. H. Adler.—p. 1350.
Pituitary and Diuresis. Bijlsma.—p. 1351.

Habitual Oliguria.—Bauer observed several cases of oliguria of apparently constitutional origin. A similar condition may be due to a primary oligodipsia or to retention of water or of salt by the tissues. The majority of these patients are fat ("salt-water-obesity"), although true edema may occur in others. Changes of the salt center in the brain, pituitary and thyroid dysfunction may be the causes. A clinically latent cancer of the stomach may have accounted for two cases. Intravenous injections of calcium, minimal doses of iodine (0.25 mg. daily) or preparations of thyroid alternating with injection of merbaphen may give satisfactory results.

Healed Generalized Tuberculosis.—Klingenstein reports several recoveries in generalized tuberculosis, and adds roentgenograms of the lungs.

Work and Arterial Blood in Diseases of Circulation.—Eppinger, Kisch and Schwarz found a normal oxygen saturation of the arterial blood in patients with heart disease before and after exertion. Such was the case as a rule even with dyspnea and cyanosis. The hydrogen ion concentration of the blood usually shifted slightly toward the acid side.

Elasticity of Connective Tissue.—Häbler and Pott measured the elasticity of subcutaneous tissue. There was no difference in healthy persons of different ages. Only the elastic resistance (the force opposed to change of shape) increases with age.

Alkali Balance and Tetany.—Mainzer discontinued acidotic therapy (calcium and ammonium chloride) in a patient with

idiopathic tetany. The alkali reserve rose high above the normal value. Besides this, the ammonia-nitrogen ratio of the urine remained also high. He advises discontinuing an acidotic treatment cautiously because of this danger of overcompensation.

Blood Sugar Determination.—Mendel and Bauch describe a micromethod which allows determination of blood sugar within eight minutes. The method is based on development of a red color on heating mixtures of dilute dextrose with concentrated sulphuric acid.

Münchener medizinische Wochenschrift, Munich

73: 1183-1222 (July 16) 1926

Regulation of Breathing. H. Straub.—p. 1183. C'td.
Necrosis of Pancreas in Coma. E. Schott.—p. 1185.
*Treatment of Hypertension. K. Westphal.—p. 1187.
Freckles and Univitelline Twins. E. Decking.—p. 1188.
Sinus Thromboses. W. Kindler.—p. 1190.
Diagnosis of Duodenal Ulcer. A. Schüle.—p. 1191.
*Treatment of Schizophrenia. U. Berndt and K. Kolle.—p. 1191.
Medical Philosophy. A. Bier.—p. 1192. C'cn.
Balneotherapeutic Indications. H. Weskott.—p. 1196.
*Goiter and Social Status. Klein.—p. 1199.

Treatment of Hypertension.—The theoretical basis for the therapeutic use of salts of sulphocyanic acid (rhodan) is its position on the extreme right of Hofmeister's lyotropic series of anions. It acts more strongly than iodine and in an opposite manner to sulphate. It enhances the dispersion of colloidal systems, and may counteract the decreased permeability of the surface of smooth muscles of arteries, in case this exists in hypertension. Westphal had good results with small doses: 0.1 Gm. three times daily in the first week, twice a day in the second, once a day in the third, with a rest in the fourth week. He confirms the beneficial effects of daily administration of 0.6 Gm. of it in tertiary syphilis and tabes.

Treatment of Schizophrenia.—Berndt and Kolle conclude that injections of calcium salts are without any effect in the treatment of schizophrenia.

Goiter and Social Status.—Klein finds an increased frequency of goiter with lower social condition.

Wiener klinische Wochenschrift, Vienna

39: 833-856 (July 15) 1926

Chemistry of Digestion. K. Glaessner.—p. 833.
*Leukemoid Changes in Infections. A. Herz.—p. 835.
Papilloma of Umbilical Cord. A. Blau.—p. 837.
*Insulin Precipitation. F. Ornstein and R. Mera.—p. 840.
*Blood Groups in Hemophilia. P. Moritsch.—p. 842.
Congenital Syphilis. H. Orel and H. Wimberger.—p. 846. C'cn.
Individual Prevention of Syphilis. K. Heymann.—p. 847.
Carbon Dioxide Baths. L. Hoffmann.—p. 847.
Meteorism. H. Kahler. Supplement.—pp. 1-8.

Leukemoid Changes in Infections.—Herz observed a case of necrotic tonsillitis and enlargement of the lymph nodes and of the spleen in a young physician. Of the 18,000 white cells, 50 per cent were myeloblasts. The erythrocytes and hemoglobin were normal. The patient recovered.

Insulin Precipitation.—Ornstein and Mera were unable to induce formation of antibodies by injections of insulin. The results were also negative when they mixed insulin with hog serum. Any serum added to insulin is precipitated.

Blood Groups in Hemophilia.—Moritsch reports a good result from a second blood transfusion in a hemophilia patient. In his and Kubanyi's cases the blood group of the patient (II) was identical with that of his mother. Brothers with a different blood group remained healthy.

Zeitschrift f. d. ges. experimentelle Medizin, Berlin

51: 333-602 (July 21) 1926. Partial Index

Nephrectomy and Metabolism. K. Beckmann et al.—p. 333.
*Drugs, Extracts and Respiratory Metabolism. E. Gabbe.—p. 391 and p. 447.
Action of Pituitary Extracts. K. Gollwitzer-Meier.—p. 466.
Carbon-Nitrogen Ratio in Urine. P. Hönig and H. Wada.—p. 479.
*Insulin-Glucose Treatment. S. Osato.—p. 488.
Estimation of Volume of Blood. A. Hartwich and G. May.—p. 497.
Liver and Metabolism of Amino-Acids. Wowsi and Gelbird.—p. 518.
Alimentary Hemoclastic Crisis. W. Brack.—p. 525.
Muscular Work and Gastric Secretion. A. J. Bridžius.—p. 573.
The Chemism of Diabetes Insipidus. Haymann and Fanconi.—p. 588.
*Internal Secretion of Sex Glands. E. Kylin.—p. 599.

Action of Drugs on Respiratory Metabolism.—Gabbe studied in a long series of experiments the effect of extracts and drugs on the gas metabolism of rats. A respiration apparatus of the Hildebrandt type was used. Injection of insulin increased the respiratory quotient during the first two hours and decreased it during the next two, depending on an increased decomposition of proteins and fat. Epinephrine increased oxygen consumption and also carbon dioxide excretion, the respiratory quotient remaining unchanged. Glycocoll, alanin, guanidin and creatinin had a slight influence when given fasting, but when given with considerable amounts of insulin, there was only a slight insulin effect on the respiratory quotient. Quinine and opium caused in fasting animals an increase of the respiratory quotient. Opium reenforced the action of insulin. The consumption of oxygen was considerably increased by small quantities of thyroid extract, decreased by larger. The pancreas showed a greater activity on increase of thyroid action. An increase of sugar combustion from insulin injection is possible without an increase of oxygen consumption.

Value of Insulin-Dextrose Treatment of Diseases Other than Diabetes.—Osato based his insulin-dextrose treatment of typhoid and heart insufficiency on his experiments on animals. Experimental acidosis was produced in animals with bacterial toxins, renal insufficiency or starvation. It was shown that intravenous injection of dextrose, especially when combined with insulin, had an excellent effect in pathologic conditions in warding off acidosis. This was confirmed in the clinic. The action on the heart was also studied on the isolated rabbit heart, and the remarkably favorable effect of the insulin-dextrose treatment found by others was confirmed.

Internal Secretion of Sex Glands.—Kylin prepared extracts from corpus luteum, follicular fluid and ovarian parenchyma of cows and horses, and studied the effect on the blood-sugar level. Extracts of follicular fluid caused in every case a rise in blood-sugar; extracts of corpus luteum, a decrease. Extract of ovarian parenchyma did not give any comparable results. The extract of corpus luteum may contain a substance with the same effect as insulin.

Zeitschrift f. d. ges. Neurologie u. Psychiatrie, Berlin

103: 1-322 (June 28) 1926. Partial Index

Histology of the Sympathetic Nervous System. E. Herzog.—p. 1.
Pathogenesis of Dementia Praecox. F. T. Münzer.—p. 73.
*Treatment of General Paralysis. R. Schröter.—p. 133.
Diffuse Carcinosis of the Meninges. F. Kino.—p. 198.
Aplasia of Testicles. L. Ziegelroth.—p. 307.

Treatment of General Paralysis by African Relapsing Fever.—Schröter reports 140 cases of general paralysis in which treatment was with inoculation of *Spirochaeta duttoni*. He obtained as good results as with malaria therapy. The previous treatment, age or the type of the general paralysis seemed to be immaterial. The fever is less stormy than in malaria, and it requires no treatment, as it becomes spontaneously arrested. This relapsing fever therapy is recommended when the patient is unable to afford hospital treatment. Supervision by the family physician is sufficient.

Zentralblatt für Chirurgie, Leipzig

53: 1937-2000 (July 31) 1926

*Prevention of Joint Stiffening. H. Richter.—p. 1938.
Indications for and Sequelae of Splenectomy. W. Dobrzaniecki.—p. 1940.
*Traumatic Perforation of Healthy Appendix. R. Gutzeit.—p. 1943.
Alcohol Injections for Trigeminal Neuralgia. Nasaroff.—p. 1946.
Hernia of Linea Semilunaris Spigelii. P. Meyer.—p. 1949.
Tension Forceps for Wire Suturing of Bone. H. Schum.—p. 1951.

Prevention of Joint Stiffening.—To secure fixation of the parts after osteotomy, Richter recommends the use of Schanz' blunt-tipped nail, the ends protruding from the soft parts being held firmly in the plaster cast. The joint is thus left free and can be exercised.

Traumatic Perforation of Healthy Appendix.—Gutzeit reports the case of a boy, aged 14, who was kicked in the abdomen by a horse and immediately developed symptoms of peritonitis. Operation, undertaken without delay, showed perforation of the appendix. The perforation, the size of a pea, was the only intestinal injury. The appendix appeared otherwise healthy and the boy had had no symptoms from it before the accident. He recovered. Gutzeit mentions that such a case is rare in the literature and is not traumatic appendicitis.

Zentralblatt für Gynäkologie, Leipzig

50: 1937-2000 (July 24) 1926

*Radiotherapy of Carcinoma of Uterine Cervix. W. Fürst.—p. 1938.
Preoperative Roentgen Irradiation in Cancer. F. Heimann.—p. 1945.
"Foretelling the Sex of the Fetus." W. Sauer.—p. 1951.
"Relation Between the Sugar Content of Fetal and Maternal Blood." K. Hellmuth.—p. 1952.
*Air Embolism with Cesarean Section. L. Kraul.—p. 1956.
Rapid Growth of Benign Tumors. W. Pfeilsticker.—p. 1960.
Biologic Dangers of Artificial Abortion. Kakuschkin.—p. 1961.
Prevention of Abortion After Operations on the Pregnant. B. v Váró.—p. 1964.
Occlusion of Uterine Cervix After Curetting. H. Loebel.—p. 1965.

Radiotherapy of Cancer of the Uterine Cervix.—Fürst lists the radium equipment of thirty-six German and Swiss clinics, showing that Berne with 300 and Zurich with 254 mg. of radium element lead them all. Berlin is the only other clinic that disposes of more than 200 mg. (216). He thinks that this scanty equipment is responsible for the meager results obtained to date. He insists that both roentgen and radium rays are required for combating cancer of the cervix. Preliminary exposure to roentgen rays reduces the size of the tumor, and by its action on bacteria helps to ward off peritonitis. The irradiation after the operation should be with radium.

Air Embolism with Cesarean Section.—Kraul reports what he says is the fifth case on record in Austria of fatal embolism from this cause. The pelvis had not been raised during the transperitoneal cervical cesarean section, but after the two tiers of sutures in the lower segment of the uterus had been completed, slight pressure had been applied to the fundus through the vagina. The uterus was not massaged. As the bladder peritoneum was being sutured, the young primipara began to suffocate; the heart continued to beat for a minute after total arrest of respiration, but the patient died the twentieth minute from the beginning of the operation. Necropsy showed the ovarian and renal arteries and the inferior vena cava much distended with air.

Meditsin. Obozr. Nizhn. Povolzhya, Astrakhan

5: 3-131 (Feb.) 1926. Partial Index

Action of Calcium Chloride on Vessels. G. A. Maloff.—p. 3.
*Enzyme Action of Blood Under Fatigue. E. N. Kogan.—p. 14.
*Vesical Calculi in Women. M. I. Bikovtseva.—p. 39.
Small Intestine in Incarcerated Hernia. G. D. Viliavin.—p. 49.
Genesis of Traumatic Neuroses. I. B. Grossman.—p. 90.

Changes in Enzymic Action of Blood Under Fatigue.—Kogan studied these changes in rabbits and guinea-pigs after intensive muscular exercise. The lipolytic power of the blood serum appeared enhanced, the increase of the lipase paralleling the fatigue. The condition did not return to normal before the ninth hour after the experiment. The protease index was somewhat lower than normal; the amylolytic property remained unmodified.

Vesical Calculi in Women.—In Bikovtseva's experience, stones in the bladder were most frequent in children, comparatively rare in middle age, and more frequent again after 40. Among about 11,000 female outpatients, this lithiasis was noted in only two. The number of cases of vesical calculi in women amounted to only 2 or 3 per cent of the number in men. The anatomic structure of the female urethra allows spontaneous elimination of bladder stones. If this does not occur, the urethra can easily be dilated without harm to the sphincter. Thus the bloodless intervention of crushing the calculi and extracting their fragments is the operation of choice in women. In cases in which this cannot be done, colpocystotomy is the preferable operation.

Prophylakticheskaya Meditsina, Kharkov

5: 1-159 (Jan.) 1926. Partial Index

*Hemolytic and Scarlet Fever Streptococci. L. V. De George.—p. 12.
*How Much Water Does a Malaria Mosquito Need? I. V. Vasilieff.—p. 19.
"Americanization" of Health Education. J. I. Livshits.—p. 84.

Serologic Relations Between Hemolytic and Scarlet Fever Streptococci.—De George's research was made with eleven strains of streptococci isolated in scarlet fever and other streptococcus infections. Two rabbits were inoculated with an emulsion of streptococci found in erysipelas or in scarlet fever cadavers. A week after the last injection, blood was drawn from the animals, and the serum obtained therefrom was mixed with glycerin and phenol. Antigens were prepared from all the strains. The fixation of complement was complete or almost complete in the two serums with any of the antigens. The fixation reaction does not seem to be specific for any streptococcus infection, and the scarlet fever streptococcus does not, he thinks, represent a special serologic group.

How Much Water Does a Mosquito Need for Its Development?—Vasilieff's experiments demonstrated that 1 cc. of water—with adequate food and a favorable temperature—suffices for the normal development of the larva of the malaria mosquito and its transformation into the adult form. It may be easy to destroy small reservoirs of water, but it will be difficult to detect them all.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

2: 637-744 (Aug. 7) 1926

*Typical Scurvy. E. H. Hermans and A. K. Horst.—p. 638.
Pertubation in Treatment of Sterility. M. H. G. A. Tholen.—p. 644.
Three Cases of Thrombosis in the Penis. J. H. Broers.—p. 650.
David Henry Gallandat, 1732-1782. J. G. de Lint.—p. 651.
Historical Medical Exhibition. W. S. Unger.—p. 661.
Public Health Measures at Utrecht in Former Centuries. A. J. van der Weyde.—p. 669.

A Typical Case of Scurvy.—Two men, father and son, had been living for years on a monotonous, vitamin-poor diet, when the son, a man of 47, developed extremely severe joint and skin disturbances, with hemorrhages and fever. The juice of six lemons transformed the clinical picture at once.

Acta Path. et Microbiol. Scandinavica, Copenhagen

2: 289-384, 1925

Meningococci. M. Kristensen and O. Moltke.—p. 289.
*Tissues in Fever. R. Fåhraeus et al.—p. 323.
Blood Platelets. S. Petri.—p. 357.
*Cysts in the Cerebellum and Angiomatosis of the Retina. A. Lindau. Supplement I, pp. 1-128 (May) 1926.

Tissues in Fever.—Fåhraeus with Andersson, Sundberg and Euler exposed erythrocytes and plasma for a few hours to different temperatures. They observed a sudden—not continuous—change just above the temperature physiologic for the species (horse, man, fowl, eel). A temperature corresponding to fever diminished the aggregation tendency of erythrocytes and blood platelets as well as the retractability of the blood clot. It also prolonged the coagulation time. This change occurs in mammals at 37-38 C., in birds above 42 C. and in fishes above 30 C. The sudden change suggests some melting process. Lipoids of the organs (suprarenals, pituitary, aorta), lose their anisotropy at these temperatures. They conclude that these observations illustrate the physical changes occurring in tissues in fever.

Cysts in the Cerebellum.—Lindau has collected 275 cases from the records. They form almost 10 per cent of the published instances of brain tumors. His list includes twenty-four recorded cases of angioplastic cerebellar tumors and sixteen from his own practice, and four cases of a similar tumor in the medulla. Angiomatosis of the retina has been encountered in 20 per cent of such cases. In one instance he found both a cyst and a capillary angioma in the cerebellum. In eight of the published cases there was also a cyst in the pancreas, in ten others in the kidney, and in six a hypernephroma. An extensive bibliography and seventy-three illustrations accompany the monograph.